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# ARCHAEOLOGICAL RESEARCH IN NORTH CHINA

## A REVIEW

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CHINA has at last been invaded by the prehistorians and a flood of light has suddenly been thrown on this the last archaeologically dark domain of the Asiatic continent.[1] Almost it is a matter for congratulation that the event did not happen sooner, or at least that it came as it did. For it is extremely fortunate both for China and for the science of archaeology that this new field should be opened up by men of scientific training and attainment, men competent to do a model piece of work and to set a standard for future workers. It should save time and money and confusion.

Precisely how the investigations resulting in the cited list of papers came about is not made entirely clear. To all appearances the splendid achievements of the three men concerned are mere

[1] Essays on the Cenozoic of Northern China. By J. G. Andersson. Memoirs of the Geological Survey of China, Series A, No. 3. 152 pp., 3 maps, 9 pls. Peking, 1923.

An Early Chinese Culture. By J. G. Andersson. Bulletin of the Geological Survey of China, No. 5. 68 pp., 17 pls., 15 text figs. Peking, 1923.

The Cave Deposit at Sha Kuo T'un in Fengtien. By J. G. Andersson. Palaeontologia Sinica, Series D, vol. 1, Fasc. 1. 43 pp., 12 pls., 26 text figs. The Geological Survey of China, Peking, 1923.

Preliminary Report on Archaeological Research in Kansu. By J. G. Andersson. With a Note on the Physical Characters of the Prehistoric Kansu Race, by Davidson Black. Memoirs of the Geological Survey of China, Series A, No. 5. 56 pp., 12 pls., 10 text figs. Peking, 1925.

Note sur deux instruments agricoles du neolithique de Chine. By E. Licent and P. Teilhard de Chardin. L'Anthropologie, tome XXXV. 12 pp., 3 text figs. Paris, 1925.

Le Paleolithique de la Chine. By E. Licent and P. Teilhard de Chardin. L'Anthropologie, tome XXXV. 34 pp., 1 map, 15 text figs. Paris, 1925.

accidents—by-products, as it were, of research in the wider domain of natural science. Men with more distinctly anthropological interests had been in the field before and we possessed brief articles, for example, by E. Borschmann, J. Edkins, E. Faber, E. H. Giglioli, and B. Laufer, written, some of them, under such titles as *The Stone Age of China* and *Prehistoric China*. So far as can be judged, however, our French and Swedish naturalists took their starting point from Laufer (who had doubts about a Stone Age in China) and from R. Torii, the Japanese archaeologist who, in 1914 and 1915, made us familiar with the character of Stone Age remains in eastern Mongolia and southern Manchuria.

Dr. J. G. Andersson, who was formerly Director of the Geological Survey of Sweden, came to China in 1914 to serve as Mining Adviser to the Chinese Government. For a time, he tells us, his technical work kept him busy to the exclusion of everything else, but in 1916, prompted by an accidental fossil discovery, he began definitely to plan a campaign for the study of the Cenozoic deposits of northern China and obviously he has of late years given a large portion of his time and attention to the special subject of human prehistory. His first publication listed above comprises a series of brief preliminary reports on the resulting field observations, covering in particular the red clays (*Hipparion* series) of Tertiary age; the gravels, sands, and loesses of Quaternary date; as well as such post-loessic formations as peat bogs and other sedimentary accumulations of recent and historical times. In addition to the open air surveys, a considerable number of caves were examined, some of which contained fossil-bearing deposits representing various faunistic periods.

Several of these papers, while not purporting to be archaeologic in primary intent, have definite bearings on the geographic and geologic possibilities for the occurrence of early human and proto-human remains in North China. Other articles are specifically concerned with cultural data. Among these is one describing a number of stone, bronze, iron, and ceramic objects from certain peat bogs in the Peking plain. In a special section headed "Early Man," brief consideration is given to the anthropoid (?) tooth described many years ago by Schlosser and by

him referred to the Tertiary. The human sacrum from Honan province, described by Matsumoto in 1915 as exhibiting Neanderthaloid features, is also discussed and with the assistance of Dr. Davidson Black shown to be a modern survival. Finally, some flaked stone objects found on the surface near Kalgan in Chihli province are described and figured, among them a large blade resembling the obsidian specimens commonly found in our Pacific Coast states. A comparison with the Solutrean laurel leaf point is hazarded, but contemporaneity is not insisted upon. The author concludes by stressing the point that while his investigations have revealed the wide distribution of Eneolithic (transition from stone to copper) remains,

> all we have to say at present is that we know of no undisputed proof of Palaeolithic or early Neolithic man in North China (p. 142).

The second and the most suggestive paper is devoted chiefly to a preliminary account of the discovery and partial excavation, in 1921, of his great Eneolithic type station, the Yang Shao. This is an ancient village site located about five miles north of the Mien Chih Hsien railway station in northwestern Honan, i. e., a little south of the Yellow river and not far below the great elbow—in other words close to the heart of the region in which tradition places the origin of Chinese civilization.

More specifically, the Yang Shao site is a refuse deposit measuring 480 by 960 meters and averaging three meters in depth. It rests on a sloping plateau consisting mainly of Tertiary red clays and is bounded on all but the upper side by great ravines or gulches attaining depths of forty meters. Illustrations of these gulches may be seen in Dr. Andersson's article in the Swedish anthropo-geographical journal *Ymer* for 1923, p. 239, etc. The author has come to the conclusion, prematurely it seems to me, that these immense channels have been eroded in the plateau since the deposition of the village debris because

> in many places all along the ravines the culture deposit forms isolated pillars which are difficult of access and which are evidently only isolated remnants of an earlier more continuous deposit (p. 20).

This perhaps need not be taken as a demonstration of extreme age for the defunct village, inasmuch as Père Teilhard and Dr.

Andersson both emphasize the evidence in various parts of North China of marked erosional activity in recent times. Nevertheless, these "ravines" are what in America we should call great gulches or moderate size canyons and, unless checked by incontrovertible data, it would seem to the reviewer rather probable that while no doubt some erosion has taken place along the escarpment margins of the culture deposit, the great gulches were there when the ancient village was founded and were in fact the principal reason for the choice of location. The steep gulch walls afforded excellent natural protection such as was commonly taken advantage of, for example, in our own Southwest and, as we shall see later on, also in Kansu province.

An interesting cultural feature, revealed in the escarpment walls, is a series of pits dug into the original red clay formation and now filled with artificial debris. These pits are circular in plan and taper upwards. Their depths range from one half to two meters and their diameters average from two to three meters. Being for the most part too small for dwelling purposes, they are thought to resemble closely the "cellar pits" of Neolithic Europe, while of course they find close parallels also in our American storage pits.

The excavations made at Yang Shao, though limited in extent, yielded excellent results. No complete inventory is given, but of first importance may be mentioned a series of about sixteen good skeletons, to which we shall refer later on. Of the animal bones found the vast majority belong, significantly enough, to the domestic pig. The artifacts include objects of stone, bone and antler, mussel shells and burnt clay, aside from true ceramics. Stone was used for rectangular perforated knife blades (still surviving in metallic form in China), axes of the celt type, adzes, chisels, hoes or mattocks, pestles or mullers, spinning whorls, spear and arrow points (of ground slate), and certain large flat rings, possibly armlets. Bone was worked into awls, needles, arrowpoints, rings, and apparently other forms not specified; while antler was utilized for two axes resembling those of the Danish shellheaps. Mussel shells were apparently employed for rings and arrowpoints. Burnt clay, finally, appears in the shape of

rings, spherical balls, and above all in a rich assortment of pottery which by itself constitutes the bulk of the collection.

The Yang Shao ceramics divide into two great classes, hand-made and wheel-made, with some additional specimens which show the utilization of both techniques. Briefly characterized, the hand-made ware is thick, coarse-tempered, devoid of slip and therefore of natural gray to brown color, and the surface, when not left plain, is either marked by textile or mat impressions or is checker-stamped. The wheel-made wares, on the other hand, are thin, finely tempered, with surfaces (1) left natural and treated much as above, (2) polished and fired to a shiny black or red, (3) covered with a red or white slip which in turn is ornamented with black or red geometric patterns. Further contrast appears also in the vessel shapes. Thus the hand-made wares seem to be confined to mugs, jars with either flat or pointed bottoms, and two distinct forms of tripod vessels (acutely observed by the author to bear a strong resemblance to certain bronze vessels of the Chou dynasty); while the wheel-made series include bowls, jars, vases, high-footed bowls, pots, pitchers, tumblers, etc. The painted wares are said to run largely to bowls. As a matter of general interest it may be observed also that, with a very few marked exceptions, all the vessel forms are flat-bottomed and that lugs, when used, are always vertically placed. It is a temptation to describe and analyze this Yang Shao pottery in much greater detail largely because of the striking similarity which the painted series bears not only to the Eneolithic pottery of the eastern Mediterranean area but also to our own Pueblo and Calchaqui ceramics.

There remains to add that certain suggestive features of this discovery at Yang Shao and at other places, near and far, prompted the author to undertake comparative studies in various directions—duly set forth in the first and last parts of the paper —and which in time led him to two significant conclusions. One is that, as already intimated, several of the Yang Shao traits, such as the rectangular perforated knife, the adze, the stone armlets, and the peculiar tripod pottery vessels, have close parallels in historic Chinese culture and in at least two instances survive

in but slightly modified form, though in a different medium, down to the present day. Dr. Andersson is so impressed by these survivals that he ventures to designate the Yang Shao complex "An Early Chinese Culture." The other conclusion is that there is a marked similarity between the Yang Shao wheel-made pottery —in particular the painted ware—and the Eneolithic ceramics, for example, of Anau to the east of the Caspian Sea, Susa near the head of the Persian Gulf, and Tripolje in southwest Russia. In this view he receives support from at least two European students of Near East archaeology, with the result that he feels warranted in broaching the hypothesis that we have here in Honan province substantial evidence of contact between the West and the East in prehistoric times.

In concluding his paper the author is still struggling with a number of difficult problems growing out of his discovery. The available evidence is conflicting and some of the conclusions to be derived from it are of such import, with reference especially to the origin of the Chinese and their civilization, that he may well pause. He does not venture, for instance, to say explicitly whether he would identify the Chinese people with what appear to be the basic or localized elements of the Yang Shao culture complex or with the bearers of the exotic pottery derived, let us say, from the Near East. Nor does he take a definite stand with reference to either the *age* or the *culture stage* represented. He admits, on the one hand, that the Yang Shao furniture is distinctly Neolithic; but, on the other hand, because of the close similarity of the tripod vessels to the Chou bronzes and also on account of the wheel-made pottery, he feels inclined to date the Yang Shao culture just beyond the dawn of Chinese history, i. e., to the third millennium B. C. and to call it Eneolithic. These are no doubt safe and sane conclusions; but meanwhile one can hardly avoid suspecting that further excavation at Yang Shao will ultimately reveal a stratigraphic separation between the obvious Eneolithic stratum, of comparatively recent date and foreign introduction, and a true localized Neolithic stage of somewhat greater antiquity.

The third publication is a final report on the topographic and cultural features of a small cave, discovered and excavated also in 1921, in Fengtien province, Manchuria. Sha Kuo T'un, after which the site is named, is a junction terminal on the Peking-Mukden railway, barely seventeen miles inland from the northwestern extremity of the Gulf of Liao Tung, an arm of the Yellow Sea. A belt of limestone country rises here, back of the broad coastal plain, and caves are fairly common.

The Sha Kuo T'un cavern is situated about 216 meters above sea level and faces E-N.E. In dimension it has a length of 6 meters, a width of 2.5 meters, and a maximum frontal height of fully 2 meters. It was found filled evenly to within half a meter of the horizontal ceiling with soft debris, which attained a maximum depth at the front of 1.5 meters. This floor deposit was a homogeneous soft gray loam mixed with angular fragments of limestone and through the mass ran three successive fireplace horizons made up of ashes, charcoal, and other evidences of human occupation. The lowest and most conspicuous of these stratification levels furnished nearly all the archaeological material recovered; but several items were found, both above and below, in the cave earth proper, as well as in the fireplace levels, with some curious occurrences suggestive of former disturbance. All of the deposit was carefully excavated and for its size yielded an exceptionally instructive series of relics.

The collection recovered includes marine shells and animal bones not yet identified. It includes the fragmentary, partly burnt and completely disarticulated skeletal remains of at least forty-five human individuals, to which reference will be made later. Finally, there is a small but varied series of artifacts, which the author has classified, described, and figured in detail. The inventory is as follows: Chipped stone is represented by raw flakes, flakes with secondary chipping on one face (ineptly compared to Chellean tools), a drill point, and three arrowpoints, each with concave base. Ground or polished stone appears in four small celts, a crude disk, 24 small pear-shaped buttons (marble and soapstone), 54 beads of globular, disk, and tubular forms,

about 18 flat stone rings—some large enought for bracelets, and a miniature sculptured animal figurine. Mussel shell is here positively used for rings and armlets, as suggested by the Yang Shao collections. Bone objects comprise awls, needles, tubular beads, an arrowpoint with stem and two wings, a chisel, and a polisher or wedge-shaped tool.

The ceramic remains are few and fragmentary but nevertheless make a considerable showing as to types, which obviously approximate those of Yang Shao. Three styles are distinguished: a coarse hand-made ware, unslipped and gray to brown in color, with either string or mat impressions, incised patterns, and sometimes also on laid or plastic decorations; a fine, thin, possibly wheel-made ware of unslipped brick red or shiny black color and without ornamentation; lastly, a moderately thin and fine wheel-made ware covered with a red slip and decorated in black. Dr. Andersson has made considerable effort to mend and to restore, with the result that we have at least the outlines of bowls and pots with flat bottoms, also bowls and uncertain forms of vessels with pointed bottoms, one jar with a narrow neck and vertical lugs, and at least fragments of what appear to be the toes of a tripod vessel.

Due consideration is given to both the horizontal and the vertical distribution of the archaeological remains and Dr. Andersson concludes from these that the whole sequence of layers represents one and the same culture stage. Still, as he points out, it is worth noting that the three or four fragments of polychrome pottery recovered were all found in the two bottom levels. The peculiar condition and distribution of the human skeletal remains also receive special attention and are in the end regarded as indicating that the cave was not used primarily either as a dwelling or as a burial place, but perhaps as a place for votive offerings. Cannibalism, the author thinks, is not demonstrated, though it is a possibility.

The striking similarities between this cave furniture and that of the Yang Shao village are briefiy pointed out, likewise also the differences. One of these latter, apparently not mentioned, seems to be the occurrence at Sha Kuo T'un of *incised* pottery ornamen-

tation. Our author naturally seeks, also, for analogies in the Torii collections from South Manchuria, but finds only a few. The paper concludes with the opinion that this cave culture of Fengtien province is of the same date as the Yang Shao culture of Honan or possibly a little younger.

The fourth and last of Dr. Andersson's papers is a preliminary report on his most recent (1923–24) and very fruitful investigations in Kansu province. This strategic territory was explored westward to Kokonor Lake in Tibet and northward beyond the Great Wall apparently up to, if not beyond, the Mongolian border; but most of the intensive field work was confined to the vicinity of Lanchowfu, the provincial capital. This city is located on the Yellow river, more than 1500 miles from its mouth and in a region where several important tributaries branch off. All of these stream valleys exhibit a nearly uniform topography, characterized especially by a succession of terraces, and it is mainly on these terraces that the archaeological stations occur.

Two types of sites were here discovered, viz. villages and cemeteries. The ancient villages are situated mostly on the middle terrace, or more precisely on islands and promontories eroded along the edge of this terrace and which were chosen no doubt because of the natural protection they afforded. The grave fields, on the contrary, are generally located on the highest terrace. In all twenty-seven sites were discovered and examined, and these the author has segregated and arranged into six chronologic groups, some of which are represented by both villages and cemeteries, others by either one or the other. This grouping, while not final, is based on a number of criteria, such as variation in ceramic styles, presence or absence of copper implements, the increasing frequency of copper, etc. One of the chronologic steps is actually proved by stratigraphic superposition.

It would take too long here to name and fully characterize each of these six culture periods. Besides the data given are not full enough, except perhaps as regards the pottery. The statement is repeatedly made, however, that the stone and bone implements found in Kansu are of essentially the same character as those found in the Yang Shao sites of Honan. Several distinctly new

items are noticeable nevertheless. One is a knife made, Eskimo fashion, from a thin oblong piece of bone with a slit along one edge, set with flint flakes. Another is a supposed hoe blade improvised from a horse scapula. Jade rings and certain small incised bone plates are also noticeable. Cowry shells are found in what is thought to be the last horizon. Finally, the supposed upper three of the chronological stages are represented by stations containing a small series of copper and perhaps also bronze implements.

The ceramic features distinguishing the six tentative chronologic horizons of Kansu can be only briefly indicated. Wares of the first or oldest stage are mostly of the unslipped kind, with surfaces marked by either textile or mat impressions or decorated by geometric stamping produced with a comb-like instrument. Of vessel forms only the jar is mentioned. The second horizon —corresponding to the Yang Shao of Honan—furnishes pottery much like that of Honan, but of a paler shade. A special Kansu feature is that many of the household vessels are ornamented on the inside as well as on the outside. Also a distinct funerary pottery appears here, consisting mostly of large globular-bodied jars with wide or narrow necks, astonishingly like our Southwest ollas, and carrying its own peculiar decorative pattern. The third level is characterized by two types of vases, one large and tall with narrow neck, the other small and wide-mouthed. Both are painted with simple, almost crude, geometric straight-line patterns embodying zigzag, checker, and lattice elements.

The fourth level is very rich in pottery, which, moreover, is of a kind said to be entirely different from anything previously known. Household and sepulchral wares are not differentiated, the decorations on the two being at any rate much the same. As a whole these ceramics are of a porous and somewhat inferior quality; bottoms are concave and not flat as in earlier periods; shapes also are thought to be different, though that is not clearly borne out by the illustrations, which show only vases or jars. The decorative patterns are applied zonally and embody straight bands, wavy bands, triangle bands, and actual meanders. To these are added attached vertical elements and detached features,

including bilaterally symmetrical figures, such as volutes, as well as some crude animal representations.

The fifth ceramic group is a little indefinite. It is represented by a small amount of material from two different sites, and these, it is said, may even prove to be of different ages. The outstanding features are unslipped jars with saddle-shaped mouths and tripod vessels identical with one of the two forms found at Yang Shao in Honan. Onlaid or plastic decoration is sparingly applied. The association of copper objects alone would seem to separate this stage from the true Yang Shao. The sixth and last chronologic stage, found in the desert near the Mongolian border, is represented also by two distinct types of pottery. One of these is coarse, unslipped or only partly slipped, and comprises simple pots and pitchers. The other is a delicate ware, exquisitely painted with bands of triangles, chevrons, and simple lines, as well as encircling rows of conventionalized birds. This latter example is obviously of foreign origin and the author points out its possible affinity to a similar style found at Susa.

In taking leave of the Kansu cultures, as differentiated by ceramics, it is clearly out of place to venture on criticism. All the evidence is not presented. The author has naturally emphasized the differences which characterize the six or more successive groupings, differences which are no doubt much more real than the few illustrations can make clear to any reader. Still, the reviewer feels himself impressed not a little by apparent similarities. Thus the entire series of vessels illustrated runs to jars and vases of very similar body outlines, while in Honan many bowls were present. The illustrated specimens seem to be mostly hand-made, or at least only a few show that rigid symmetry suggestive of the wheel technique; but on this subject the author has yet to inform us. Flat bottoms (in one horizon said to be indented) and large vertically placed loop handles or lugs characterize nearly all the wares alike. The painted ornamentation on the inside of the vessel rims, said in the text to be a feature of the second or Yang Shao stage, is also noticeable in the illustrations representative of the third stage (Pl. II) and occurs in at least one instance in the ceramics of the first stage (Pl. V). Lastly, the

character of the painted ornamentation, while it shows variety, seems after all to belong to one family of designs, with the exception of the two fragments of Susa affinities. In brief, therefore, it would not be surprising if future study should prove some members of this ceramic sequence to have been contemporary. If not that, then the series must be genetically related and therefore presumably largely of local manufacture and origin.

In the last part of the paper Dr. Andersson takes up once more the questions of absolute chronology and cultural migrations. He has in the meantime profited by the critical comments elicited from several European students by his first semi-speculative endeavors in the second paper under review. The therein suggested Near East affinities of the Yang Shao pottery have been critically examined, for example, by Dr. L. Franz of Austria and by Dr. T. J. Arne of Sweden (see monograph on Yang Shao painted pottery, Pal. Sin. Series D., Vol. 1, Fasc. 3), with the result that the date of the Yang Shao culture is now estimated at about 3000 B. C. Dr. Andersson does not stop here, however, but proceeds boldly, on the basis of the ascertained archaeological records of Scandinavia and Crete, to assign an average duration of 300 years to each of his six Kansu culture periods. This, it is thought, will bring the known prehistoric record of Kansu down to about 1700 B. C., or well within the range of semi-legendary Chinese history. There is perhaps nothing impossible in this reckoning; nevertheless it leaves something to be desired. Thus, it is admitted, on the one hand, that aside from the few surviving Yang Shao traits already mentioned there is little, if anything, even in the last Kansu horizon to indicate the approach of historic times. On the other hand, it is pointed out that Chinese pictorial script, ornate bronzes, etc., cannot be traced back historically beyond the 14th century B. C. In other words, there is still an appreciable gap to be bridged between Chinese history and what is obviously Chinese prehistory.

As to cultural migration, it follows from the above that the author now regards his earlier hypothesis of Mediterranean influence on the late Neolithic of China as substantially proved. It is not entirely clear, however, as to how much of Chinese culture

he would credit to the West and how much, if any, to the East itself. For while aware of the Licent-Teilhard discoveries of a Palaeolithic industry in the Middle Pleistocene of North China, he reiterates his belief—and rightly—in a Neolithic hiatus, devoting a chapter to its explanation on possible climatic grounds. It is true he later admits (p. 40) that there may be some indirect evidence pointing to a true Neolithic horizon for North China and, in fact, ends up (p. 50) by suggesting the presence of an early aboriginal culture, the thinly spread traces of which will ultimately be found. Still, these hypothetical inhabitants were in his judgment mere hunters and fishermen, with possibly a beginning of hoe culture, and had little or nothing to do with the bearers of the Yang Shao culture, which seems to have appeared suddenly and in a fully developed condition on the Honan stage. Otherwise stated, it seems to be Dr. Andersson's confirmed opinion that the entire Yang Shao complex was derived from without and presumably from the West. This, however, is a conclusion difficult to accept, both on general grounds and because the facts bearing on the subject do not all seem to point that way. Fortunately for me, Dr. Andersson has himself quoted several passages from the critical comments of Professor Karlgren of Sweden anent this subject and with the general tenor of which one finds it easier to agree. This view is, in substance, that the bulk of the Yang Shao traits surviving in historic Chinese culture were developed practically in place, while the painted ceramics—and probably some other features—alone had their impetus in the West.

Confirmation of this view seems derivable also from the skeletal remains, to the study of which we may now briefly refer. Professor Davidson Black, who took part in the excavations at the Sha Kuo T'un cave and to a lesser extent at Yang Shao, has all of Dr. Andersson's skeletal collections under investigation and he has appended a few preliminary observations on the Kansu material to the present paper. He has also, in the meantime, published a detailed report (Pal. Sin., Series D, Vol. 1, Fasc. 3) on some nine comparable skeletal elements derived from the Honan and Fengtien collections. In preparation for these studies, it is well to remark, Dr. Black, as Professor of Anatomy at the

Peking Union Medical College has, in collaboration with his colleague Dr. Paul H. Stevens, for a number of years been collecting anthropometric data, especially on the North Chinese. And what has Dr. Black to say about the racial affinities of his prehistoric peoples? With respect to the Fengtien and Honan data, this, viz., that . . . .

> in a host of both general and detailed characters . . . . the Eneolithic and recent North China materials are similar. In a few features only the Sha Kuo T'un and Yang Shao material stand in sharp contrast to one another and to the recent North China Specimens. . . . . It becomes difficult therefore to avoid the conclusion that the Sha Kuo T'un and Yang Shao peoples conformed to a type essentially similar to that represented by the present-day North Chinese with whom comparison has been made. (Op. cit., p. 98.)

When we turn to his brief statement on the Kansu skeletal remains, representing fully 120 individuals, we find him saying (p. 54) very much the same thing. Briefly stated, the majority of the prehistoric Kansu peoples are closely akin to those of Honan and Fengtien because they also

> broadly conform to the modern type termed North Chinese or Homo Asiaticus propius.

The exceptions are four skulls, derived from the second and third culture levels, which have several traits in common with western races but nevertheless, in their sum total of characters, "show a fundamental similarity to the proto-Chinese type" with which they were found. The significance of this sub-type is left for future determination, but its presence in West China is certainly nothing more than what we should expect.

The above must suffice as a summary of Dr. Andersson's investigations to dâte. Initiated by himself, scarcely a decade ago, and assisted at first by only a few scattered missionaries, his discoveries today engage the attention of several collaborators in both Europe and America, as well as in China. The promising results have won for him the cooperation of the Geological Survey of China, under whose auspices the sumptuous publications appear, and also the support of the Swedish Research Committee, headed by H. R. H., the Crown Prince of Sweden, who has himself for years taken an active interest in scientific investiga-

tion, including archaeology. It is not often given to one man to accomplish so much in such a short time. In barely five years we have advanced beyond Chinese traditions and western speculations, such as those of Terrien de Lacouperie, to the possession of substantial facts regarding the "mysterious" origin of Chinese civilization and are in a fair way to understand the source and the essential unity of all Old World civilizations. One cannot do less than congratulate Dr. Andersson on so enviable an achievement.

When we turn to the brief publications of the two remaining authors their story is scarcely less remarkable. Father Licent came to China also in 1914 and has been steadily active since then collecting natural history materials of all kinds. His efforts have been confined largely to the Yellow River basin and have been in the interest mainly of the Hoangho Paiho Museum in Tientsin, an institution of considerable scope and promise founded by himself. As a matter of course a part of his time and attention has been given to the location of Tertiary and Quaternary fossil deposits and to the collection of specimens from these sites. When therefore Father Teilhard de Chardin, representing the Natural History Museum of Paris and other French scientific institutions, came out to China in 1923 to accompany his friend Licent on a field trip to the Ordos (the territory lying within the northern limits of the great bow of the Yellow River) it was ostensibly in the interest of palaeontology and geology. It is true, Pere Licent had in 1920 found three or four quartzite flakes of possible artificial origin in and below the eolian loess of northeastern Kansu, some 300 kilometers south of the Ordos; but nothing is actually stated to show that these discoveries played any part in their joint enterprise. We may imagine their surprise, therefore, when they met with evidences of a Palaeolithic culture almost everywhere they went in both the western and southern Ordos, and their further surprise perhaps when later explorations in eastern Mongolia yielded them nothing but Neolithic data.

Their first paper features briefly some of the 1924 Mongolian discoveries. The locality in question centers around Dalai Nor Lake, approximately 400 kilometers due north of Peking, and

takes in the surrounding plateau country as well as the radiating drainage basins of the Tsiring gol, Shiling gol, Shara Muren, and Laoha Ho. In the last named basin, especially near Chifeng, and to a lesser extent also north and west, were observed good Pleistocene exposures; but these nowhere gave indications of Palaeolithic remains. Neolithic data, on the other hand, occurred in many places not only on the surface but *in situ* throughout the upper black sands, one to four meters thick, which generally constituted the surface soil.

The richest of these Neolithic sites is described at Linn-si, a small town located apparently between the Shara Muren river and Dalai Nor Lake. It is marked by a hollow, about 1.5 kilometers long, blown in the black surface sands, the floor of which was thickly strewn with artifacts—derived from the swept-away matrix. Examination of the bordering escarpments gave ample proof of this origin as they revealed an abundance of the same types of material. Among the relics here recovered are mentioned the following: bones of recent and in fact mostly domestic animal species; pottery of the hand-made and unpainted order, similar to the ware found by Torii in Manchuria; and a varied series of stone objects. These last are mainly of porphyry, jasper, and chalcedony, but rhyolite and granite also served. The implements so derived comprise mealing stones, crude hammerstones, and scrapers which at first sight might be regarded as palaeoliths but are mixed with small scrapers, drillpoints, flaked celts, arrowpoints, conical cores, and fine long slender flakes derived from such cores—identical in every particular with Neolithic remains found by the Third Asiatic Expedition in 1925 in western Mongolia.

One apparent exception to this suggested uniformity of the Mongolian Neolithic is the discovery at Linn-si of two large flaked blades, respectively 27 and 35 cm. long, more or less polished by use. The specimens are of rhyolite and are identical in form with the one previously mentioned as found by Dr. Andersson near Kalgan. Their Neolithic date is fortunately proved at Linn-si. The polished and striated condition, especially of one of the specimens, suggests to the authors that they were used for

agricultural purposes, not as mattocks but as plowshares. Indeed they feel the more warranted in this conslusion because Professor W. K. Moorehead has assured them of the similarity of the Mongolian specimens to the fine so-called hoes found in our own Ohio and Mississippi bottoms; and they are consequently inclined to regard their discovery as a new proof of the peopling of America in part from Mongolia. This suggested similarity cannot be denied, though one of the Linn-si pieces, in form at least, resembles a Northwest Coast club more than it does a hoe or spade. But the idea that this resemblance indicates an early connection between the Mongolian and Ohioan cultures seems hardly more plausible than that there should have been a direct relationship between the cultures of the eastern Mediterranean and the American Southwest, however loudly the ceramics of the two regions seem to proclaim such a kinship. Elliot Smith alone, I suppose, would welcome any such hypotheses.

The last paper by Licent and Teilhard is a preliminary account of their Ordos discoveries. It opens with a brief delineation of the local Cenozoic geology, which seems to agree in all of its broader features with the observations of Dr. Andersson and others in adjacent parts of North China. The Pliocene red beds are succeeded by Quaternary gravels and sands which in turn are capped by a mantle of loess, itself now considerably eroded and partly covered by wind-blown sands and fluviatile deposits. In other words, the region has suffered a succession of climatic changes of considerable intensity, ranging from dry steppe conditions suggested by the loess to torrential conditions such as are now dissecting the loess at a rapid rate. It is this present-day process of vertical erosion which greatly facilitates the task of fossil hunting.

Our explorers entered the Ordos at its extreme southwestern limits, by way of Ningsiafu, and discovered here at once, in the immediate vicinity of the Great Wall, their first and most important Palaeolithic center. The principal station of the locality is situated near the hamlet of Choitongkou, where in a small stream valley of the same name was found exposed, close to the bottom of the locally 15-20 meters thick loess mantle, a well-

defined fireplace or habitation stratum about half a meter thick and 20 meters in extent. The indicated settlement had apparently been located on the edge of either a stream or a lake. From a space of about 40 square meters of this deposit were excavated more than 300 kilograms of worked stone material and considerable quantities of semi-fossilized bone fragments that were strictly speaking kitchen refuse. These fossil remnants represent, in order of abundance, the wild ass, horse (?), hyena, gazelle, ostrich (*Struthiolithus*), *Bos primigenius*, *Rhinoceros tichorhinus*, and perhaps *Ovis ammon*—a fauna which as a whole is regarded as indicative of Middle Pleistocene times. Some of the same species were also found above in the inclosing loess itself, as were likewise a number of artifacts.

The artifact collection from Choitongkou consists entirely of flaked and chipped stone specimens, which are of rough finish, being made mostly of quartzite, the chief local medium available. In the cited inventory are anvils, hammers, nuclei, rough blanks or bifaces, as well as a series of flake or blade forms such as points, side-scrapers, end-scrapers, and perhaps a rudimentary burin. All retouching is done on one face only as in the typical French Mousterian and Aurignacian stages, which this Ordos culture approaches. The reviewer has recently examined a series of representative specimens at Tientsin and finds himself much impressed by the lack of refinement and definition of the industry as a whole—a condition which is not entirely accounted for by the more or less intractible raw material used. Flint-like rock, including jasper, was utilized in addition to the quartzites. In general appearance the work impresses one as Mousterian; but the technique employed as well as some of the forms produced are obviously more advanced and comparable to the Aurignacian. Under these circumstances, and especially in view of what was found by Von Merhart in the Upper Yenisei (AMER. ANTHROP., 25; 21–55), the complete absence of bone implements in the Ordos industry is very strange. It suggests to the reviewer the probability that the center of origin for the culture lies elsewhere, presumably to the west.

With this fairly complete characterization in mind, it is unnecessary to go into details about the other discoveries, which were quantitatively unimportant though perhaps slightly more significant as to age. One locality is about 150 kilometers E.-S.E. of Choitongkou, centering in the headwater region of the Shara-ossogol, in the south-central Ordos. Here, in one place, at a depth of some 55 meters, beneath a succession of dune and lake deposits, was found a very rich fossil stratum. Extended excavations revealed all the animal species found at Choitongkou and many more besides. This faunal material was also at least in part, kitchen refuse and included some deer antlers which had the tines broken off in identical manner and showed besides some indications of having been used perhaps as clubs or pounders. Man's presence was proved, moreover, by the recovery from the deposit of a handful of chipped stone specimens, mostly of a diminutive and nondescript character but with a few forms similar to those of Choitongkou. The last region to yield Palaeolithic artifacts in place was another 50 kilometers southeast, namely, at Yanfang-tou, in northern Shensi. This locality is well within the grand loess belt of North China, the deposit attaining here a thickness of 150 meters. Only about six rudely flaked quartzite pieces were discovered at this place, along a 5 kilometer exposure; and these all came from the conglomerates beneath the loess where they were associated with a mixture of Middle Pleistocene and older, i. e., derived fossil remains. Such derived fossils suggest that the artifacts may themselves antedate the inclosing conglomerates but this possibility is provisionally denied. The geological settings of these three specified occurrences of the Palaeolithic, it will be seen, differ somewhat; nevertheless, the uniform character of both the industrial and faunal remains is such as to incline the discoverers to the belief that all are of approximately the same age.

These three major localities, some of them with several subsidiary stations, range roughly from Ningsiafu eastward along the Great Wall almost to Yulinfu, a distance of 200 kilometers. A previous discovery by Pere Licent, now taking on real signifi-

cance, has already been mentioned at Kingyangfu, 300 kilometers to the south in Kansu province. Lastly, on their return journey, following the great bow of the Yellow river, our authors found typical weathered palaeoliths on the surface at two different places in the western and northwestern Ordos, the latter site being nearly 200 kilometers north of Choitongkou. This ascertained distribution of industrial remains of nearly the same character and date is thought to indicate one identical culture which probably had an even much wider geographical range. Their surmise on this last point I am now pleased to be able to confirm, because the Third Asiatic Expedition found in 1925, in western Mongolia, surface traces of what is unquestionably the same culture.

In concluding, two negative features of the results to date are mentioned. One is the apparent lack of vertical range or time distribution of the mixed Palaeolithic traits discovered. Everywhere this nondescript culture was confined to the basal portions of the Middle Pleistocene deposits and nowhere did they find it in contact with the commonly superposed Neolithic. Between the two stages there is affirmed to be a great gap. Nevertheless it is noticeable that their Neolithic is a true, perhaps an early, Neolithic and not a late Neolithic or Eneolithic as discovered everywhere by Dr. Andersson. The other negative feature is the complete absence of Palaeolithic skeletal remains. This is a serious matter, calling for further efforts; for, as the authors point out, until such remains are found, the loess man of China cannot be named.

## Summary and Conclusions

The subject-matter of these papers has appealed to me as so new and so far-reaching in importance that I have allowed myself a recital of details beyond the scope of the usual review. Asia occupies a uniquely central position among the world's land masses and therefore any anthropologic discovery made within her borders has significance not only for herself but for every other part of the world. Asia is the traditional place of origin for things human; and if tradition nowadays counts for little, it need only be added that modern scientific opinion also favors Asia. This opinion may or may not be well founded, at any rate with respect

to culture. It may be nothing more than simple conformity to the ancient practice of relegating the source of things to realms about which we know nothing. But in any case the central position of Asia remains and cannot be ignored in the discussion of either origins or migrations.

First then as to Asia, or more precisely Greater China, and the facts there discovered in the last few years.

1. Palaeolithic remains of Mousterian and Aurignacian affinities and associated with a fauna of Middle Pleistocene aspect have been found by Teilhard and Licent rigidly *in situ* in and below the eolian loess at about twelve places in contiguous portions of the Ordos territory and the Shensi and Kansu provinces, i. e., about 800 miles up the Yellow river basin. Surface traces of a very similar stone industry have also been found by the Third Asiatic Expedition some 700 miles away in western Mongolia. In both localities the indicated culture seems to appear and disappear suddenly, showing no signs either of having developed in place or of having been modified into anything approaching, let us say, the Neolithic.

2. Neolithic remains are stated by Teilhard and Licent to occur at least superficially in the Ordos country and vicinity. In eastern Mongolia they found the industry both on the surface and in stratigraphic position in the black sands forming the top soil. Toril's discoveries in Manchuria were also made essentially on the surface and are in part regarded as of fairly recent date. My own Neolithic finds in western Mongolia, on the other hand, gave indications of considerable antiquity; for the remains there occurred deep down in ancient sands and were besides the outgrowth of an earlier or distinctly pre-Neolithic industry. But, whatever the range in time, we have positive evidence that a true Neolithic culture once flourished pretty much throughout the entire zone separating Siberia and China proper, all the way from the Pacific shores to the Altai mountains.

3. Eneolithic stations to the number of thirty-eight in all have been found by Dr. Andersson ranging clear across North China, or at any rate from the Yellow Sea to Kokonor Lake, a distance of about 1200 miles. Most of the sites are however

in the west, or well up the Yellow river basin, in Honan and Kansu provinces. In addition, I have myself during the past winter found, away to the south along the Yangtze river in Hupeh and Szechuan provinces, the refuse deposits and scattered remains of a somewhat similar Eneolithic, or as I should prefer to call it, Late Neolithic culture.

What interpretation, it may now be asked, can safely be placed on this extraordinary array of facts? Three detached segments are indicated to us as being all there is in Greater China of the whole normal culture curve! This certainly does not argue for east-central Asia as being anywhere near the original center or centers of cultural dispersal, whatever be the palaeontologic indications with reference to man's physical origin. But perhaps further research within the limits under consideration may yet close the apparent gaps. Perhaps also the situation would look less puzzling were we in full possession of the details already made available by archaeological discoveries, for example, in French Indo-China, Yunnan, Tibet, and Siberia. Two Russian colleagues have recently hinted to me of both actual and potential discoveries in south-central and southeastern Siberia which might throw some light on China's prehistoric problems. But, accepting the facts as they appear, first with reference to the so-called Eneolithic culture stage, typical of the northern provinces within the Great Wall, and granting provisionally that this complex did not develop in place, we are bound to ask, where did it come from? To this question there appear to be only three possible answers.

It might have come all of it at different times from the West. Yet, except for the painted pottery of late prehistoric times, there is little either racially or culturally to show that it did so and at least some things to suggest that it did not. Thus several Eneolithic traits—semilunar and rectangular knives, unpainted pottery, etc.—which were undeniably present in Greater China when the painted pottery of Mediterranean aspect arrived and which survived in historic Chinese culture, have distinctly northern affinities. Indeed, the unpainted pottery of prehistoric North China belongs to an order of ceramics which has circumpolar distribution, being typical of much of North America, western

and northern Europe, as well as of northern Asia. If, therefore, this relatively primitive ceramic style and the various other traits associated with it came from the Mediterranean area it must have been in very remote times. Moreover, the suggestion is not wanting that the really localized culture of Yang Shao times, while it may have absorbed certain Mediterranean elements and profited by the stimulus, in the main repelled western influences, as Chinese civilization has done off and on down to the present time.

The Eneolithic of North China might also have come up from the distant South. Fenollosa presumably would have us believe that it did. And the large quantities of pig bones found in the Yang Shao and related sites, as well as the isolated discovery by Dr. Andersson, in a peat bog near Peking, of a pair of water buffalo horns, would seem to point in that direction. But the South, though perhaps first on the ground, is obviously not to be credited with everything Eneolithic in North China.. The North also presents weighty claims. A Neolithic culture flourished for a long period here beyond the Great Wall and several elements of the Yang Shao and later complexes to the south of the wall were undoubtedly derived from this source. Such a view is materially strengthened also by the fact that northern race traits characterize both the Yang Shao people and the historic Chinese. Were one therefore to venture a summary opinion based on the facts now available it would be this, namely, that the Chinese nation and civilization are neither of them of western origin, though developed no doubt under repeated stimuli from the West, but are rather a mixture of ancient and distinctly East-Asiatic elements of which the northern, and probably the latest, have been on the whole the more aggressive, though they are not yet wholly dominant.

But if in some such way we may close the gap between the Eneolithic and Neolithic of China, it is otherwise with the hiatus separating the Neolithic and Palaeolithic. In Mongolia this lacuna is less marked than in China proper, but it is there and must for the present be left unexplained. The same is true with respect to the Early Palaeolithic. I had the best imaginable opportunities

for discovering traces of this stage in western Mongolia, but found nothing, at any rate nothing corresponding in type to the Lower Palaeolithic of western Europe.

Second, as to the wider significance of these recent archaeological discoveries in China. With respect to the Palaeolithic there is nothing positive to be said. Its geologic position and its fossil associations insure its antiquity; but whether this proved age is equal to or is appreciably greater or less than the age of the corresponding culture levels in western Europe cannot now be stated. Presumably, however, the two are nearly contemporary. Its geographic range is also unknown at present. Indications are that it forms one area with the Yeniseian Palaeolithic, which being the more richly furnished must itself be nearer the original source than is the Ordos phase. This seat of origin would appear to be either west or southwest, because there are as yet no indications that east-central and northeastern Asia were reached by this Middle and Upper Palaeolithic wave—a circumstance which augurs strongly against these or earlier culture phases ever having reached the American continent. Corroborative also in a measure of this view, it may be added that the Stefansson collections from Pt. Barrow and other places in Alaska reveal no elements that need be taken as Palaeolithic.

When we turn to the Neolithic there is scarcely more to be said. The culture attains a considerable age, for instance, in Mongolia, while in Manchuria and elsewhere it has survived down to well within historic times. It is widespread at least in the northeastern quadrant of Asia and has a number of traits in common with both Europe and America. Whether or not this is to be taken as an indication that northern Asia fostered the development of the Neolithic and that it spread thence into Europe and America, it is of course too early to say.

In conclusion it will be enough to state that while our recent investigations to date have furnished no evidence either for or against the biological origin of man in Asia, the evidence brought to light respecting the beginnings of culture points elsewhere.

PEKING, JULY, 1926.

P.S. Since completing this paper and while searching the library of the Geological Survey of China for possible archaeological literature relating to the southern provinces, I have discovered a number of important papers on recent archaeological research in French Indo-China, including Tonking, Laos, Burmah, and Cambodia. It is too late for me to incorporate the findings in the present paper; but I can do no less than state that the investigators have collected their data from caves, shellheaps, and villages, as well as from the surface, and that they have distinguished an early or primitive Neolithic (with possible Palaeolithic affinities) and a late or advanced Neolithic. The impression I have obtained from a hasty examination of text and illustrations is that, barring the stemmed ax blade peculiar to Farther India, the limited array of stone, bone, and shell objects, together with unpainted pottery, strongly resembles the equipment found by myself this past winter in the Yangtze Gorge country. The Indo-China complex is therefore probably another variant of Dr. Andersson's Yang Shao culture of North China. One of the papers embodies a review of all the recent East Asiatic discoveries on lines not unlike the present essay. The interested student should consult publications by H. Mansuy, Etienne Patte, etc., in the Mémoires (Tome x, xi, xii) et Bulletins (Tome vii, xii, xiii, xiv) du Service Géologique de l'Indochine.

# THE SUMERIAN AND ANTHROPOLOGY

By HENRY F. LUTZ

THE following pages are intended to show that the Sumerian had a science which we may call anthropology, if we keep in mind that it is cultural anthropology exclusively that interested him, and that only in so far as it touches questions of man's pre-cultural stage and the culture development from this to higher stages.

We, furthermore, will see that his investigations deserve the name "scientific" to the same extent as certain modern anthropological, ethnological, economic and sociological theories built up on a purely metaphysical basis, are permitted to be labeled by that term. When Meissner states in his second volume of his recently published book *Babylonien und Assyrien*,

> Der zweite Band der Kulturgeschichte Babyloniens und Assyriens handelt von der Wissenschaft. Diese verdient ihren Namen aber nicht in dem Sinne, sondern sie ist rein theologisch

this statement is undoubtedly true from the moment that the cultures of the Sumerians and the Akkadians were fused, but not for the period when Sumerian thought was still uncontaminated with Semitic ideas.

Until recent times the hypothesis originating from the German economist Friedrich List (1789–1846) was maintained that man at first at the lowest step of culture was engaged in hunting. But at this stage he also learned to tame or domesticate some of his prey in order to secure some kind of economic surety. This was supposed to give rise to the next period in the culture history of man, the period of the shepherd, which in turn again owing to the increasing numbers of population gave rise to agriculture as the basis of every other phase of higher culture life. We shall see that this "*Dreistufenschema*" agrees completely with the Sumerian viewpoint, which was gained by the Sumerian thinker by the same process of abstract thinking based on insufficient observations as it is gained and elaborated by his modern colleague.

The Sumerian was fortunately situated to gain information about primitive life. In fact, he could for some time carry on his observations right at home. And he appears to have been a keen observer. His observations were valued so highly that at a later period they were even incorporated in various literary texts. So, for instance, in the Gilgamesh epic where genuine Sumerian cultural possessions clustering around the personification of Enkidu and Gilgamesh were retained as a kind of prologue to the epic itself.

We are too little informed as to racial movements antedating the Sumerian and early Akkadian periods. Were there people who entered the country prior to the Sumerians and the Akkadians and settled among the neolithic indigenous population? There are certain faint indications in the remains of Sumerian culture which point to a pre-Sumerian element that was non-Semitic.

In the Epic a certain type of foreign settler, non-Sumerian and non-Semitic, appears in the personification of Enkidu, similar to the giant Alban, the eponymous ancestor of a people who invaded Britain. Enkidu, who came from the mountains, had gone about naked; his body was covered with hair, his broad face is bearded, curls are protruding at the side of his head. He had lived with the creatures of the field, and his life had been one of savagery. The story of Enkidu is not

> a tale to illustrate the evolution of man's career and destiny, how through intercourse with a woman he awakens to the sense of human dignity, how he becomes accustomed to the ways of civilization, how he passes through the pastoral stage to higher walks of life, how the family is instituted, and how men came to be engaged in the labors associated with human activities (Jastrow),

but, as stated originally represents a type of foreign settlers who entered the country at a stage when, according to the syncretism of the Epic, the transition from the small rural settlement to the town community had already been accomplished. The town dwellers were no doubt impressed by the hairy and powerful invaders who made their abode outside the towns and they soon permitted the newcomers (owing to the defeat of the former) to

settle among them in the towns, to assimilate their culture and to intermarry with their own women. It must be remembered that the Epic preserves traditions of extreme antiquity in precisely the part which deals with Enkidu and Gilgamesh together, and the events treated paint in lively pictures the vicissitudes of the life of the people. What Jastrow read into the account dealing with Enkidu may have been, to some extent, also read into it by later Babylonian generations, but it was not implied in the original account when this part of the Epic was still independent and had not yet been used as a kind of prologue to the Epic proper.

From such considerations all difficulties also vanish which force the faulty supposition (so Jastrow) that Enkidu is merely a reflex of Gilgamesh. And as Enkidu represents invading foreigners of a low cultural niveau, so Khumbaba seems to contain allusions to Semitic invasions from the West or, as is more likely, invasions from the eastern Zagros chain.

The Epic, like all the great literary productions of pre-classical antiquity, grew, new elements were added to old ones and these again, in order to fit into the new thought, were somewhat changed, so that it is not always clear what constitutes older and what newer elements, but this much is certain that the part dealing with Enkidu preserves old observations of low-cultured invaders of the country.

The people represented by Gilgamesh are pictured in the Epic as town dwellers. The likeness of Gilgamesh and Enkidu seems to indicate a fusion of the two racial elements. If Gilgamesh does not represent either the Sumerian or the early Akkadian, then we might suppose that he represents the original indigenous population of the land. But this is excluded from the mere consideration of the seal-cylinders (see below). It, again, is more likely that Gilgamesh represents an earlier type of invader, who, in the time when the Epic was formulated, had advanced already to some kind of municipal organization before the Sumerians arrived. This, of course, is uncertain. When it is stated in the Epic that Gilgamesh and Enkidu are brothers, born in the same place, it can only be harmonized on the basis that after the fusion had taken place, both ethnic elements continued and multiplied in the same locality.

As stated, then, the Enkidu story is a very old account of the invasion of barbarous hordes to which later other traditions and myths were added and the whole, under Akkadian influence, was cast into a religious and ethical frame, in which Enkidu changed into the figure of a Hercules and even into that of an Adam or first man.

On the old Sumerian seal cylinders Enkidu is represented with animal hoofs or with the horns of the bison. Gilgamesh, on the other hand, is seen on the earliest seal cylinders fighting a bison; but a succeeding period exchanged the Elamite bison for the Mesopotamian water-buffalo. When both, Enkidu and Gilgamesh, are represented together, Enkidu fights the lion and Gilgamesh the buffalo or the bison. How very old this motive is, becomes clear from the fact that outside of this group of seal cylinders the fat-humped zebu ox, which was descended from the South-Asiatic *Bos sondaicus* and which was introduced into Babylonia via India, was already domesticated here together with a hump-less kind in the Sumerian period. We, therefore, stand here, where the bison is introduced on the seal cylinders, on prehistoric ground. The fight of both men with wild animals would indicate that both belonged to a hunting period, and this taken together with what we know from the Epic would seem to show that it was Gilgamesh, or rather the Gilgamesh people, who first invaded and settled the country, followed later by the Enkidu tribe. The hoofed Enkidu which simply marks the period when Enkidu lived with animals and much like an animal, was never interpreted by the early Babylonians as corresponding somewhat to the hipopodes, a class of "portenta" of medieval ethnology.

Enkidu and Gilgamesh, we may be sure, represent pre-Sumerian types, mighty hunters and nothing else. This early stage attracted the Sumerians and they repeatedly tried to represent to themselves the difference of culture and the rise of culture. The *Dreistufenschema* is again and again noticeable, especially in the Didactic Poem of Creation, which is written in Sumerian and Akkadian (Cuneiform Texts in the British Museum, Part XIII, plates 35 to 37). For our purpose this text is more important than the Gilgamesh Epic for the reason that the latter is couched

in popular mythological language, while the former is kept free from every mythological adornment. The successive steps of creation are indicative of the successive stages of man's culture. The wild animals (called the beasts of the plain) were created after man, just as in the Biblical creation story in the second chapter of Genesis. Since the Sumerians in their various literary productions dealing with the beginnings of life and culture tried to interweave both the physical and cultural development with the strongest emphasis on the second, they seem, therefore, to have desired to indicate by the creation of man prior to the wild animals and every other life the fact that mankind is older than all culture.

The Sumerian was less interested in an account of physical creation; the latter he merely used as a basis for his account of the development of culture. Now, the creation of man before that of the wild animals is also stated in other texts, so that we may be sure that this was the accepted Sumerian theory. But this presupposes that the Sumerians considered primitive man to have been a hunter who sustained his life with the flesh of the wild animals. The Sumerian, however, has not come to a clear conception in regard to all the details. So for instance he omits to ask himself from what the beasts of the field lived, unless the next step in the plan of creation provides for this oversight. However, we must keep in mind that to him the essential matter was not to enter into these details of creation, but to delineate the various culture stages of mankind. In fact, it becomes more and more evident that the Sumerian had no desire to write creation stories, but delighted in stories of the beginning of culture. Of course, a creation with successive stages he took for granted, but this he used merely as a basis on which he could build up his *Dreistufenschema* theory.

According to an old Sumerian text (Barton, *Miscel. Babyl. Inscr.*, Part I, plates XVIII and XIX) on the first stage

> the light-god did not yet come forth over industry, mankind who knew the land, acted by full day, bread and intoxicating drink they did not yet know, garments of cloth they did not yet know.

Whether the reference to the light-god contains an allusion to the discovery of fire-making as one of the first and most important technical means or not, must remain uncertain. Perhaps new texts will shed more light on that. How much the Sumerian's thought was limited to his geographical surroundings, so that he projected conditions of lower Mesopotamia back to primeval days is clear from the picture which he drew of man at this stage.

The people erected their dwellings in the high (?) reed. Similar to cloth they wove garments with its reed. They drank the water of the lowlands.

It was a state in which

the mother-sheep was not yet cherished, the lambs were not yet flocked; the goat did not yet exist, (but) the kind of the bison was in numerous herds. The sheep and its wool was not yet created, the goat and its kid was not yet created.

This statement is in full harmony with the Didactic Poem of Creation, because after the wild animals the conditions were created which permitted man to rise from the hunting stage to the shepherd stage by the creation of the cow, the sheep and the goat. Thus man now could live from the milk of his herds in addition to the meat of wild animals, especially the bison, which abounded in the land according to the text under consideration. But at this stage

the heavenly host, the great gods did not yet know the names of the grain, of the long canal, of the pond and of the plow. *Shesh*-grain of thirty fold existed not yet, *shesh*-grain of fifty fold existed not yet.

Then Enki and Enlil caused grain to come forth in Duazag and

they impregnated the field with grain (and) they gave the plow, the water dam and the sun to the steppe land.

And as Enki and Enlil had placed a protecting male deity over the herd as a patron-god, so now they establish "a goodly maiden" over the grain. This is rather interesting because in a later period the divinity of agriculture remains female (Nisaba). The Sumerian anthropologist, it appears, had somewhat similar views to those maintained by some of his modern colleagues, who attribute to woman an important role in reference to the beginnings of agriculture (see C. G. Heinrich Schurtz, *Urgeschichte der Kultur*, Leipzig und Wien, 1900. p, 241).

With the gift of grain went hand in hand the divinely willed occupation of the cultured man. Man is now fitted for the task set him at creation: divine worship. This is clearly stated in the sixth tablet of creation and in the text published by Ebeling, in *Keilschrifttexte aus Assur religiösen Inhalts*, No. 4, line 27.

In logical continuation, therefore, the text of the University of Pennsylvania Museum proceeds to state that at this stage man was taught the divine service and with it the foundations of social organizations were given. The text closes with the strophe:

houses in the plain of clay they founded, a lord they (the two protecting deities) let be unto them; they (the two deities) remained at his (the lord's) side, as their companions they remained, the companions of the people, lightening their sorrow, (their) helpers in everything.

A thought recurring for instance in the Dilmun myth and which apparently was a common Sumerian idea is expressed here in the closing line,—"Lightening their darkness," or "lightening their sorrow!" To the Sumerian it was not unknown that with cultural progress there went hand in hand an intensified economic and social struggle as an evil concomitant which seems to have been taken rather as necessary if cultural progress should go on. The patron deities in some way were supposed to alleviate conditions, but man was not supposed to intervene. Ethics was not yet born. It was left to the last century to look into this matter more seriously and to find out whether or not the "sorrow" of the culture man is a necessary concomitant or not.

Such in outline are the anthropological speculations of the Sumerians which can be gleaned from the present material. Later discoveries may enable us to throw more light on similar investigations. The Semite, on the other hand, nipped these beginnings and instead of a cultural progress, the Sumerian view that man is to be considered as rising from a lower stage upward, he reversed the order and began to look upon the creation of man as the perfection of the universe. But in order to maintain this thesis it was necessary to regard man in his original primeval state as so perfect that no cultural development was possible. Such ideas necessarily had to lead to such questions as this: "What was it that brought man out of this perfect state (for it was realized long before that

man's being and position were by no means perfect; see here the Gilgamesh Epic—sickness—death—etc.)?" By reversing the original position of man, where he becomes the last link in creation, the investigations drifted completely away from the anthropological standpoint and became theological. Thus about 1000 B. C., or somewhat earlier, the doctrine was promulgated that it was sin which brought man from his high estate. Then there commenced the various speculations about the culture "ages," the "golden age," the "silver age," the "iron age," etc. While the distinctly Semitic view could hold away into our own days (and is bound to continue), the Sumerian anthropological view was lost to sight until eighteenth century science again proclaimed doctrines similar to if not identical with those of the Sumerians.

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# THE ARCHITECTURE OF THE AMERICAN INDIANS

By T. T. WATERMAN

LOOKING over the distribution of different kinds of buildings erected by Indian tribes, it is possible, with the aid of inference and some imagination, to surmise what has happened in the past, and to reconstruct the story of the Indian's building arts, from the earliest times to now. The problem of how the Indian ever came to build his more remarkable works seems to be worth assailing, and I wish to assail it, making up by brevity for what is lacking in wit. Many beautiful photographs have been taken by investigators, of very sensational pieces of native architecture, which would help to make certain points clear, and would serve to make any presentation of the facts more digestible for a reader, but only a few of them can be included within the limits of this article. On previous occasions I have flirted with this present topic[1] and I wish now to propose a sort of archaeological jaunt through the centuries, to find out what the Indian did, and to view his progress, stage by stage, from his first simple beginnings in building.

## The First Houses

When the original ancestor of the Indians came wandering over the region about Behring Strait, he evidently brought with him some very definite notion of how to build houses. This statement is easily made: but we can believe it without straining ourselves, for otherwise the original Indian could never have made the journey across the arctic wastes, nor have populated a hemisphere with his descendants after he got here. We may well ask ourselves what kind of a house he brought with him. The apparent answer is, he brought in a circular type of dwelling. The fact that

[1] Indian houses of Puget Sound; The native houses of western North America (Museum of the American Indian, Heye Foundation, Indian Notes and Monographs, 1921); North American Indian dwellings (Geographical Review, New York, January, 1924, reprinted in the Smithsonian Report for 1924).

the original type of house in the Behring Strait region was circular suggests this inference. Houses were built in a circular style when the first European explorers arrived, and nobody as far as I know has ever suggested the existence of any type that preceded the circular ones in that region, though the evidence of course remains scanty in the extreme. Taking the evidence as it exists, in the most cold-blooded way, we seem to see the introduction into America across Behring Strait, of a circular form of house, back when human history began in this area.

Lest some critic rise and shout that the Eskimo in this region build square houses of planks, citing Nelson and Murdoch, and not circular houses, I may remark again (for I have remarked it elsewhere) that these square plank houses of the Alaskan Eskimo are modern. The first white man who came into the region, the explorer Captain Cook, reported circular dwellings. His artist sketched them, both on the Aleutian Islands and on the mainland north of the Strait. The square houses of today seem to be due to contact with the Russians, for they have been in use for several generations.

My feeling is that the habit of building circular houses, introduced in this way, spread over the whole of the New World. When we glance over the two Americas, we find that circular houses are widely used even yet. We seem to see at first glance, to be sure, a sort of olla podrida of house types, round houses and square houses more or less mixed up and alternating, of a thousand varieties of form and materials. Circular houses, however, are still encountered here and there from the Hudson Bay region right away to Cape Horn. When the different forms of houses are plotted on a map, an arrangement emerges which is not exactly helter-skelter. On the contrary, the distribution of types of houses follows a sort of dim logical plan. Circular houses, namely, are without exception found among the more primitive and backward tribes, while rectangular houses are built invariably by the more progressive groups. Square houses are found in a central region, circular houses in the peripheral regions towards the Poles. This if I am not mistaken hints at a conclusion. Perhaps the circular habitation is the original or primitive type, the square houses being an afterthought or modification or improvement which came with advance in knowledge and culture.

Let us give some examples (assuming for a moment that what I have just said is true) of some of the adaptations of the "primitive" or "original" round house. The Eskimo snow house is, from this point of view, an adaptation of a primeval round dwelling. The earth lodge or semi-subterranean house of our Northwestern plateaus is another form of the same thing. So is the earth lodge of the Plains tribes, such as the houses of the Mandan and the Pawnee. So is the "tipi" of the Dakota and the Blackfoot. So is the "grass lodge" of the Osage, the "hogan" of the Navaho, and the earth-plastered "kee" of the Pima. For that matter, so is the ramshackle "wickiup" of the Paiute of Nevada. The "wigwam" of the Ojibwa is another form of the round dwelling, and so, to my way of thinking, are all other circular structures wherever they may be found, including the lodges of the Tehuelche of Patagonia, and the lunatic windbreaks of the Yahgans of Tierra del Fuego. My imagination tells me that this round form of habitation was brought into the New World by the great granddaddy of all the Indians, became diffused subsequently to the uttermost limits of things, and persists today wherever tribes have remained backward in their way of living.

## Square Houses

Dropping now into plain narrative, we may recount what happened next. As the Indian became more civilized (and this occurred in some regions at a very early date) he abandoned the round house, and took to building a square one. This was a first step forward in experimentation with the building arts.

From this point of view, the tribes of Iroquois in New York state were one evolutionary stage ahead of the Ojibwa mentioned above, since the Iroquois built rectangular structures, and the Ojibwa, round ones. The Iroquois "long house" was long ago described by Morgan. All the accounts picture the owners of these long houses as somewhat more advanced in the arts of life than their Ojibwa neighbors were. They had for example a more perfect political organization, and made better pottery, to mention only two things. All the tribes living in the southeastern and southern regions, Powhatan, Creek, Cherokee, Seminole, and the

rest, also built houses which were I think without exception rectangular, and in general these tribes were somewhat ahead of the hunting tribes of our West in the arts of life. The association of complicated and advanced ways of living with rectangular houses, the association of primitive ways with round houses, seems to my mind to be a real correlation, and by no means blind accident. All the sedentary tribes and nations in our Southwest, in Mexico, in Central and South America, including some tribes in the Orinoco basin if what I hear is correct, built rectangular habitations. In South America as in our own northern region, as we pass away from the highly advanced tribes into the region where tribes lived by hunting, we notice always a shift to circular dwellings. Speaking as briefly as possible, the area where square dwellings are found is much smaller than the area where dwellings are round, and is included within it. Square houses seem therefore to be historically later.

If anyone should insist on knowing where in my opinion the *square* house was invented and brought first into use, I should answer, on the Atlantic side of Honduras. Here architecture reached its most elaborate form, and seems to have had a longer history behind it. A conviction that houses ought to be rectangular seems to have spread from this focus until it reached the tribes far to the south in Chile, and, in another direction, reached the Iroquois on Lake Erie. The distribution of square houses is continuous over this middle area, though the houses become more primitive as we pass from the focus toward the periphery. Two historical processes are therefore visible, one a diffusion southward over both continents of a round type of architecture, and the other a diffusion of a later and rectangular habit of building from a focus in Central America. The second movement passed in both directions and caused the old round houses to be replaced, among those tribes which lay in the path of diffusion, by square ones.

The map which accompanies this article illustrates this point, I believe, with some accuracy. It is based upon somewhat sketchy data supplied in Wissler's book, *The American Indian*, a brief chapter in Nordenskiöld's monograph *The Ethnography of South*

*America*,[2] plus impressions picked up in general reading. The outlines of all areas on this map are much conventionalized, and the sharp frontiers between areas are imaginary. In the first place, each area in actual fact shades off into the next, and in the second place, I do not at all know the *exact* facts of distribution. The shading which represents the distribution of house types in South America is a work of pure divination. All shaded areas on the map, whatever their complexion, are intended to represent regions where houses are square. The unshaded parts of the map indicate the regions where houses are round. I feel positive that the square structures scattered from Utah to Chile are all modifications of one type of building. I feel a lively persuasion also that the unshaded area in the north represents the distribution of round houses that have their close relatives and counterparts in the unshaded parts of South America. A formerly continuous distribution of circular houses has seemingly been interrupted by the evolution of square forms of architecture in the middle region. What has been said therefore accounts in a general way for the appearance of square houses in America, and the matter so far is rather easily understood.

A second focus for square houses appears on the northwest coast of North America. The shading on the map extends vastly too far to the right. If I had limited the shading to the actual fringe of coast where rectangular houses are found, it would not have been visible at all. Here the houses are all rectangular, built in many cases of enormous planks, and put together in a most elaborate style of carpentry. The habitations in this region used at one time to be round. I have elsewhere gone into the evidence which indicates a shift here from circular to square styles. The change rose perhaps in part out of the singular ease of splitting planks out of the enormous conifers of this region, and may have been connected also with the high cultural level of these tribes in other respects; in art, for example, social insti-

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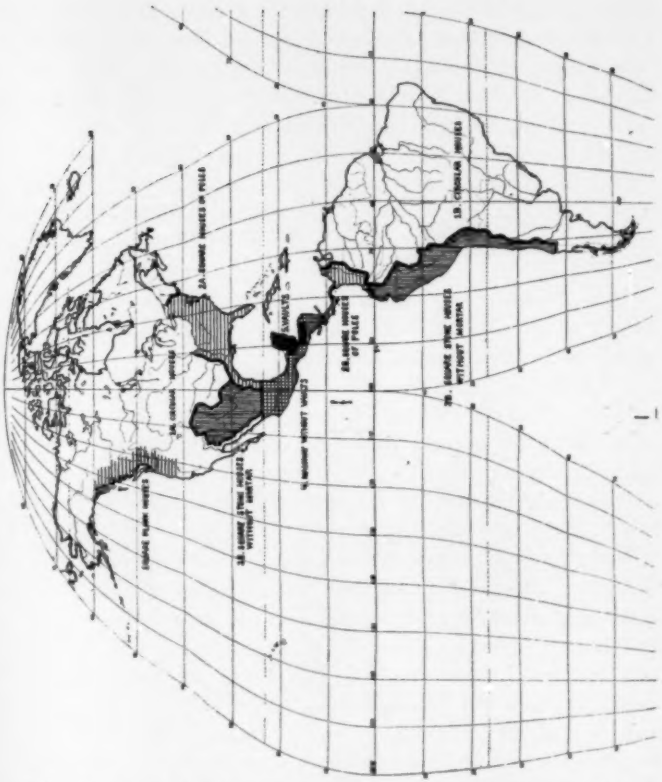
[2] Clark Wissler, *The American Indian*, New York and Cambridge, The University Press, 1921: Erland Nordenskiold, *The ethnography of South America as seen from Mojos in Bolivia:* Comparative Ethnographical Studies, Part 3: Göteborg, 1924.



Map showing the distribution of types of houses in aboriginal America. Outline map from the University of Chicago Press (Goode's homolosine projection).

The most noteworthy point brought out by the map is the symmetrical arrangement of areas north and south of the focus of the building arts in Middle America. The region numbered 1A in the northern hemisphere corresponds with the distant region numbered 1B in the southern hemisphere. The "Pueblo" area in the southwestern United States (2A) corresponds to the Peruvian–Chilean area (2B). The distribution of the square type of house made of poles in the Isthmian region remains without ready explanation.

tutions, and economic life. The map still seems to me to be fairly simple in spite of these added features. I may add that primitve American habitations have been classified from many points of view, but no other way of looking at them leads to any results that seem at all understandable. Plotting the distribution of round and square habitations leads to a result so graphic and easy to follow that there seems to be something real in it. In the meantime there are certain areas which supply examples of an historical shift from round to square buildings. This matter interests me, for every such case points like a signboard to the direction in which the building arts evolved.

A well-known and interesting area where square houses are known to have followed round houses in point of time, is our Southwest. Investigators like Kidder and Guernsey, and Neil M. Judd, report that the well-known Cliff-dwellers were preceded by Basket-makers. The Cliff-dwellers built square habitations, while the more ancient Basket-makers built themselves round huts. There are several known cases also where tribes built rectangular rooms to live in, but round structures for *religious* uses. Thus the Cliff-dwellers, to quote them again, lived in rectangular rooms, while their ceremonial chambers or *kivas* were circular. This always suggest that religious chambers are a survival of an older style of building. In many of the existing Pueblos, ceremonial chambers are still circular. The Natchez tribe who lived at the mouth of the Mississippi built rectangular wooden houses, but had a circular "temple." The latter was a wooden structure on a mound with an image of the sun in it.

I have heard somewhere that the Etruscans, living in cities and blocks of rectangular houses, nevertheless fashioned their burial-urns in the form and likeness of a round wattled hut: a fact which suggests to the archaeologists in that field that the round dwelling was an earlier type of habitation. So also the temple of the ancient goddess Vesta in square Rome was a circular building.

Such evidence seems to hint that a change from the circular to the square in architecture is a more or less common occurrence, in line with general progress in the building arts. I feel in my very soul that when the Indian left off building circular structures, and began to build rectangular edifices, he put himself in line to develop into a real architect.

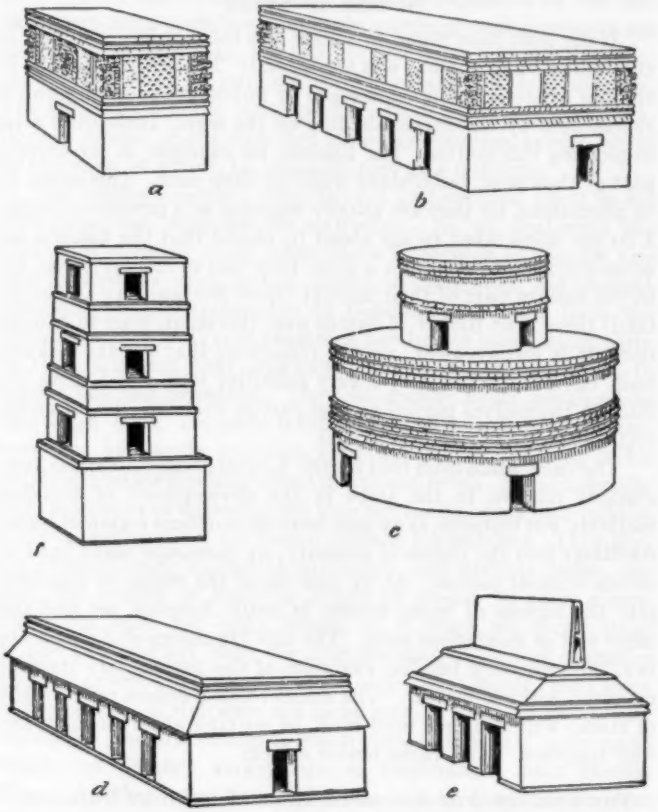



FIGURE 1. The Indian's crowning effort at architecture; examples of his striving after *form*, and specimens of *columns*, (after Holmes). Drawings *c* and *d* represent buildings at Chichen Itza, *e* and *f*, structures at Palenque.

The simple doorway is noteworthy in the first cut (*a*), the succession of doorways in *b*, *d*, and *e*, giving the effect of square piers. The buildings are not arranged in their actual historical order. The fact remains that the buildings found in ancient towns are like *a*, possessing one doorway, while numerous doorways appear in a later period. Round columns, illustrated in a cut below, appear only in the latest period. The "Mansard" roof in *e* is striking.

## Houses of Stone

If the shift from round to square was the first improvement in the Indian's house, what was the second? The obvious answer is, the use of stone. The occurrence of buildings made of stone is represented by the darker shading on the map. Difficulties arise in plotting this matter. The Eskimo, for example, in the eastern part of their area, build stone walls for their huts. This seems to be anomalous, for they are usually regarded as a primitive people. I do not know what to say about it, except that the Eskimo are anomalous anyhow, and in a sense they had to employ stone, for in the eastern part of their habitat (from Hudson Bay to Greenland) there is no timber. I hasten over this point, since to enlarge upon it is inconvenient, merely remarking that all the Eskimo built circular dwellings, of a very primitive sort, and I think the Eskimo themselves played no real part in the evolution of architecture above its primitive stages.

The data, aside from that on the Eskimo, suggest certain conclusions relative to the steps in the development of building methods. For instance, as we pass from the northern region of frame dwellings into the region of masonry, we encounter walls built of stones without mortar. As we pass *out* of the region of masonry into the regions of frame houses in south America, we find the same sort of mortarless walls. The cliff-Dwellings of Arizona are beautiful and very familiar examples of this preliminary stage of masonry without mortar. The ancient cliff-dwellers raised walls of stone, well laid, but used mud, or nothing at all, to bind the wall together. Mud came before mortar.

## The Beginning of Aesthetic Effects in Stone Building

As we pass into the region of fine stone buildings, we can watch, stage by stage, the beginnings of aesthetic development in architecture. The Indian built in stone through long ages before he developed any architectural sense to speak of. The Cliff-dwellings, again, are examples of an early stage of building in stone, showing little or no effort at architectural "effect"; at least, no conscious effort on the part of the builder. The "effect" which they have is largely due to their quaintness, and their state of ruin.

The lack of architectural sense may be illustrated by the fact that there are no windows, properly speaking, and doorways are mere holes to crawl in at. The Cliff-dweller never thought of arranging his doorways to improve the appearance of his buildings. The buildings for the most part are mere haphazard accumulations of rooms. Each structure is largely formless, except where its situation, in a cave, for example, may give it a form.

The Indian's earliest essay toward architectural effect in his structures was expended on stairways. As we deal with the edifices of outlying areas, often there is nothing to suggest any care for how the thing looked, except the long labor and thought expended on the approaches to buildings. Judging from the fairly wide distribution of examples, the Indian came rather early to the conviction that stairways can be constructed so as to appear fine and imposing. The Cliff-dweller never advanced to that stage, even. He made buildings of stone, with square chambers, but he usually provided mere ladders for climbing to his building, and for climbing about its various levels. He occasionally built stairways of masonry, but they are hardly more than ladders of stone, and in effect are leaned against the building. They give the effect of being incidental, utilitarian, and without design, except the design of enabling people to mount to their rooms. Stairways built for looks belong to a more advanced stage of the building art than the Cliff-dwellings. To find examples we must proceed to the region south of the Rio Grande. Here some ripping effects in stairways are to be seen, in some rather ancient buildings. The first examples which come to mind are those made visible by Gamio's excavations at Teotihuacan near Mexico City. Another very fine effect was obtained by the ancient builder of the pyramid at Papantla. Stairways are what the Indian architect did first, and what, to the end of his history, he did best. Few nations ever produced finer stairways, for that matter.

### The Use of Mortar

During the time when stairways were being elaborated, lime mortar seems to come into use. At least, the two things appear together. The area where mortar was used is continuous, and

this invention was never achieved but once, all the tribes which use it having apparently borrowed it directly or indirectly from one source. I do not know how the Indian ever came in the first place to think of making mortar, but at certain sites he made mortar of admirable quality by burning limestone, and before the end of his building operations, he learned to depend on it utterly. The ancient buildings in Middle America are more like our concrete constructions than like our masonry. There is a hearting of stone or rubble, set in liberal quantities of mortar, which makes up more than half of the bulk of the building. The wall is then evened up and covered with a thin veneer of very finely dressed stone. Such a building is practically monolithic. Even buildings of this stage of architecture, in spite of the use of elaborate foundations and even complicated embellishment, remain excessively homely and squat, once the stairways and approaches are omitted from view.

When in his latter days the Indian builder finally came slowly to the idea of beautifying his building proper, instead of beautifying the approaches merely, he hit upon one very good idea. He realized that doorways are architecturally interesting, that they strike the eye, and he began to use them for "effect". Buildings remain square and squat, but the native builder multiplied doorways, far beyond the limits of actual need or convenience, because he liked the looks of a series of portals. Such a series of entrances gives character at once to the façade of the building. He multiplied openings therefore, and carefully spaced them. At the summit of his success, he loaded on to such a building the most complicated ornament he could devise. He did not develop any sense for form in his buildings until late in his history, and even then his efforts were by no means crowned with perfect success.

In a stage of advancement where the Indian built elaborate pyramidal foundations (enormous some of them were), fine sweeping stairways with balustrades, and house fronts with fine successions of doorways, he still made his roofs and ceilings of poles or logs. An example of architecture at this stage of progress, fortunately well preserved, is to be seen at Mitla, in the Mexican

state of Oaxaca. The ornamentation is elaborate to an extreme, and very striking and successful, and the workmanship shown in the cutting of the stone is a thing to marvel at. Even with all this, the native builder never thought of giving the structures any artistic shape. One of these buildings, once the embellishment is discounted, is no more pleasing to the eye than a packing case is.

Nobody, however, has ever carried embellishment to a higher pitch than the Indian builder did. On the House of the Governor at Uxmal in Yucatan (see figure 2) the embellishment is worked out to represent five layers of ornamental design, conceived separately, but combined in one magnificent incrustation. Many of the finest buildings of this region are in ruins, utterly, for the labor and love was expended on the external veneer, which suffered first of all the parts of the building from time, the climate, and the plant life. In form these buildings are quite primitive and undeveloped, except for a few buildings erected during a rather brief period. The best the Indian could achieve in form was the making of square corners and vertical walls: but in embellishment he worked genuine marvels.

Some very good sculpture, for example, was worked into such façades as architectural ornament. Faces or heads were often carved on the ends of blocks, and the whole set into a wall by means of tenons. Some of this work, if it were found in Egypt or Greece, would be regarded as sculpture of a high order, but we are not in the habit of crediting sculpture to Indians. Some of this sculpture is really remarkable, with amazing spirit and fire. One might remark that the Indian not only failed to be an architect such as the classical Greek was, but did not even try, caring little for form and proportion, staking everything on exetrnal richness of pattern. He loaded on decoration as a pastry-cook spreads icing on a cake, with lavish hand, and loving care, and with a certain amount of taste. It is curious, considering the magnitude and the boldness of his enterprises, that he had no better sense for form.

## The Genesis of Columns

His love of doorways arranged in series led him step by step to a rather surprising result, the invention of round columns. This surprises me, at least, for the evolution of columns is set

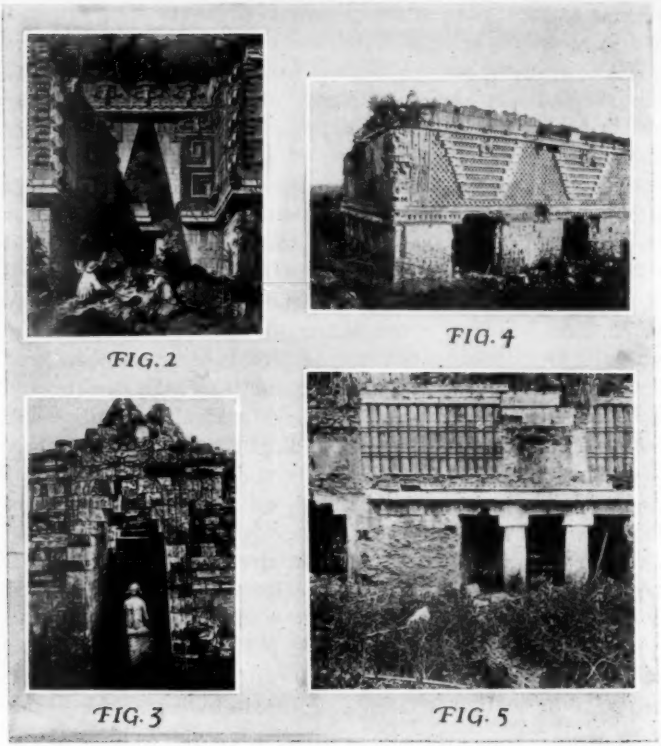



FIGURE 2. Section of the House of the Governor at Uxmal, showing a concept of five layers of embellishment, and the "Maya" arch.

This is a photograph of a pen and ink drawing made by the immortal Catherwood, in 1842 or thereabout. It is difficult to say which is more remarkable, the ancient tructure, or Catherwood's patient drawing of it.

FIGURE 3. A portal in the temple of Boro Budor in Java (after Scheltema).

The use of an offset arch, found also in Maya buildings, is noteworthy, as is the similarity in general style of embellishment.

FIGURE 4. A fine example of Maya decoration: the House of the Nuns at Uxmal (after Spinden).

The lattice-work effect is, I think, very artistic. It was also beloved by the builders of Boro Budor.

FIGURE 5. Round columns with capitals at Chacmultun in Yucatan (after Spinden).

Round columns, though not so fine as these, appear also on the plateau of Mexico, where perhaps they ought not logically to be looked for.

down to quite a different origin in the text books. In Egypt, too, columns seem to have evolved out of sections of wall. Narrow sections of masonry left between doorways certainly seem to have been gradually sensed by the builders in Egypt as square piers. Later on these square piers were rounded off, and turned themselves by a sort of metamorphosis into round columns. At least, so the matter looks to me. Square pillars in any case are early in Egypt, appearing in temples of the pyramid age, 2800 B.C., at a time when round columns may be searched for without success. In a later period, the Age of Nobles, 2000 B.C., square columns are replaced by round columns, fluted, and exhibiting capitals. Still later, enormous round columns with capitals representing parts of plants were built into the temples of the Empire, around, say, 1500 B.C.; the most imposing pillars, though not the best proportioned, in history.

When we turn to America with this in mind, we find similarly that the oldest cities in actual date have no columns. In Tikal, which is very ancient, we find no pillars, but we see façades with numerous doorways. In Palenque, a city somewhat later in point of time, the doorways in the typical buildings are so numerous, and the intervening sections of wall so skimp, that square piers seem gradually to have emerged. When we look at a Palenque building, it is impossible to discern whether the builder intended his structure to be a room with numerous doorways, or an open veranda, fronted with a row of pillars. The effect is exactly betwixt and between, and the observer can imagine that it is one or the other, as he pleases; or can see it in his own mind in either way by an effort of the will. In late towns such as those in Yucatan (later by a number of centuries, as the inscriptions and other data show clearly) square piers are sometimes employed, but round columns are very numerous. In some of the structures, such as one at Chacmultun, the columns are quite well proportioned, and have a finished look, quite in the Old World Style. Some of the towns, such as Chichen Itza, photographs of which have been spread abroad in the monthly magazines, supply examples of enormous round columns, most elaborate and fanciful.

What we find in cities of different age is what we would expect to see, if an *evolution* in columns were assumed. Square pillars linger along in buildings of late date, like the buttons which linger persistently on the cuffs of modern coats, though they no longer serve to button the sleeves back. The actual dating of the various buildings is a matter that need not concern us here, for it has already been entered into by a number of enterprising and painstaking students, beginning with a very fine old boy by the name of J. T. Goodman. The succession of styles in point of time, from walls with doorways, to square, and then round columns, is I think a positive fact, however it is to be explained.

## Vaults

The Indian toward at the close of a long period of architectural experimentation discovered a way to ceil over rooms, and to span portals, with masonry, without the help of timbers. Through the earlier stages of his building enterprises, he depended always on a wooden beam to span every opening. Wooden lintels are an element of weakness in a stone building, for the wood sooner or later decays. Some of the best and finest of Indian structures have fallen into collapse and wild ruin, because the timbers in them have rotted out. It is noteworthy, then, that in late times (but earlier by a thousand years than the coming of Columbus and the Spaniards) the American Indian succeeded in building a kind of arch or vault. This achievement was the handiwork of the Maya Indians of Guatemala and Honduras. Later the idea migrated into Yucatan, but it never passed out of the tropical area.

The vault itself utilizes the very principle employed by the Eskimo in building a snow hut. When the Eskimo starts his igloo, he makes on the ground a circle of blocks, cut out of a convenient snow bank and trimmed to form. The next course of blocks follows the first, but each block is set a little forward or inward, so that they have a slight overhang toward the center of the hut. Course by course the blocks follow this plan, until they converge toward the top, in a sort of dome. When the opening becomes narrow toward the top, one big snowball crowns the work and the house is done, except for trimming it smooth, shovelling snow over it, and cutting a doorway.

The Maya, when they wanted to close over a room, caused the successive courses of masonry in the side walls to project toward

the center, so that one wall leans forward to meet the other. The result is by no means a true arch. It therefore goes by the name of the "false" arch, the "corbelled" arch, the "cantilever" arch, the "offset" arch, or, among Americanists, the "Maya" arch. The contrivance is of course identical in principle with the "arches" of Greece in the Homeric age, as seen for example in the Tomb of Atreus and other "bee-hive" tombs, in the Lion Gate at Mycenae, and the famous galleries at Tiryns.

The earlier "arches" in Central America, compared to the later ones in the same region, are very cautious and tentative. The engineer seems to have felt that the thing was going to collapse on him. The walls lean toward each other very gingerly, and the vaults are accordingly narrow and extremely high. In later buildings the architect became very bold, and his vaults are so low and broad, and the overhang so marked, that wooden falsework had to be put in during construction.

## The Sense for Form

During the periods when these matters were being worked out, the Indian builder was feeling his way by slow degrees to the idea that a building ought to be interesting in form, as well as in workmanship and embellishment. He did not hold this thought through any very long period. Some of the buildings erected in late times are no better than the earliest ones. At the very close of his history the Indian builder adopted the idea of the "false front" in architecture, a piece of pure vulgarity if there ever was one. We see it today in bucolic neighborhoods in our own country, where a one-story building, with its gable end on the street, has its front boarded up, to lend the shack the outward likeness and similitude of a two-storey structure. A real effort at form, however, may be seen in certain Maya structures of the so-called "Archaic" period. The ruins of Palenque, already mentioned, supply us with examples. It is curious to observe how modern the builders of Palenque were, in some of their ideas.

Let us speak for example of roofs. There are of course several possible forms for a roof. The ordinary hen-coop has a plain "gable" roof. Sometimes there arises in the bosom of our builders

an itch for artistic effect, and a desire perhaps to escape from the hen-coop idea, and the ends of the gables are accordingly cut back, making a "hip" roof. Again, the gable roof may be caused to descend to the eaves in two pitches, instead of one, a device known as the "curb" roof; a style which is agreeable to the eye, and which appears in many handsome country residences. In the seventeenth century a French architect named François Marsart hit upon the happy idea of making a *hipped curb* roof. Thus arose the so-called European "Mansard" roof. The builders of Palenque were employing this same style of roof a thousand years before it came into François Marsart's head. We see at Palenque an effort, a struggle, therefore, to give the building an outline, independent of embellishment, which will be pleasing to the eye. The effort, to be sure, was not too successful; but the spirit was there, and the builder of Palenque was an architect, or at least wished in his very soul to be one.

The story of the building arts in America therefore has a number of chapters; round houses, square houses of wood, square houses of stone without mortar, square houses of stone laid in mortar (but minus all attempts at form or proportion); fine stairways and approaches, buildings of stone with amazing embellishment, and finally, vaulted ceilings, columns, and an attempt at form. The best examples of the Indian's work probably are lost to us. Embellishment was his forte, but it can be studied only in late and probably somewhat decadent styles. In the cities of the grand period, the embellishment has simply gone to pot. It is only in relatively late and decadent structures that any embellishment survives, except for a few chance pieces.

### Distribution of Types of Houses on the Map

A few words about the map on which I have plotted the styles of architecture may not be amiss. I have already explained that it is more a work of imagination than scholarship. This is partly due to my own defects of character and the fact that at the moment I have not access to the literature, and partly to the fact that the books themselves do not tell us a great deal, when it comes to the facts of distribution. The literature on houses is

very hard to use. There are ten or a dozen good descriptions of houses in as many various areas, the only really first class account of stone buildings being the one by W. H. Holmes.[3] The map in any case is not what we might wish it to be. Apparently the data do not lead to perfectly clear and satisfactory conclusions. For example there is a region in northern South America where houses are made of poles, a region wedged in between two areas where houses are built of stone. After cudgelling my brains more or less over this, I conclude that there is no very obvious reason for it. The region of square plank houses on the northwest coast of North America is as also somewhat deplorable. Square houses there seem to have followed a period of round houses, and to have developed out of them, a fact which for its own sake pleases me. But these square structures interfere with what would otherwise be a simple and logical distribution. I take considerable pleasure in the way the two areas of masonry—minus—mortar are wedged apart by the area where mortar was employed. The device of building in stone without mortar apparently went out of style in this intervening area, and out of use. Very ancient buildings here, if they could be found or dug out of the ground, ought to exhibit the archaic building methods, without the use of mortar. The area where vaults are found, if time enough had been granted, would presumably have wedged apart the mortar area, and would have made two separate areas of it. The map suggests that the building arts developed most rapidly in the small area in Middle America which is colored solid black. In every period of history, the knowledge of how to build better houses became diffused from this area to the northward and southward. As we pass from this focus toward the periphery, we find increasingly archaic types surviving in use, until we encounter the areas of primitive round lodges in the regions about Hudson Bay and Cape Horn. Conversely, as we pass from the periphery toward the center, we are following step by step the actual evolution of the art of building. This idea I admit pleases me excessively. I borrowed

[3] *The Ancient Cities of the New World*: Field Museum of Natural History, Anthropological papers, vol. 1.

it from N. C. Nelson, as everybody will probably recognize without my saying it. Nelson dealt not with houses, but with types of pottery in New Mexico and Arizona. I have always taken as much pleasure in his account of his methods as if I had written his paper myself. I have not succeeded in seeing that the data concerning houses are quite conformable. This may however be due to the difficulties of the literature concerning houses, not to the actual facts. Critics who take the trouble to look at the map will very likely be pained when they observe that the architecture of Peru is represented as equivalent to the Pueblo and Cliff-dweller architecture in our own Southwest. Though I know little enough about Peru, I am familiar at least by hearsay with the gigantic character of the masonry in some of the structures there. I admit that at first glance, Sachsahuaman is quite different from Pueblo Bonito. None the less, this Peruvian architecture seems to me to find its counterpart not in the architecture of Yucatan, nor even central Mexico, but in the buildings of a region in northern Mexico and our Southwestern states. On the southern fringe of the Peruvian-Chilean area, stone buildings are reported which have a rather startling resemblance to the pueblos of our own Southwest.

### The Source of the Indian's Architectural Ideas

Certain critics are ready to appear in court and swear that architectural missionaries came from somewhere and taught our Indians how to build. Some on looking at American Indian buildings shout "Egypt". Others cry "China". Of the two, China seems at the moment to be the burden of the loudest chorus. In this connection, one thinks always of the Chinese traveler who left a purported account of a visit to Fu Sang (see Vining's *Inglorious Columbus*) a land identified by many historians with Mexico. I am not familiar with the original (the thing being known to the Chinese themselves only in quotations) but I have read Vining's book, and I feel a lively conviction that wherever this Celestial adventurer may have gone, he certainly never arrived in Mexico. He is credited with mentioning nothing which he would have seen had he come to America. On the other hand he

is credited with describing mulberry trees three miles high, and silk worms eight feet long. Reducing these statistics to rods and inches, or millimeters, or any units consistent with sense his remarks still suggest Japan or Formosa rather than Mexico. In the meantime, the one architecture in all the world which looks most like that of Middle America is not the Chinese anyway, nor yet the Egyptian, but the architecture of extreme southeastern Asia, particularly Siam, Cambodia, and Java, with a few analogues in India. This raises a point which I would rather enjoy discussing, but meanwhile it ought to be remarked that a solitary voyager, a pilgrim, a castaway, or a missionary, could hardly have induced a barbarous people to plan cities, or adopt new building and engineering methods. One traveler, or a ship load of them, can have little effect on an alien culture, in any case. It is a true saying, and worthy of being noted, that two nations begin to affect each other's way of living, when there is an interchange of commodities. Missionaries accomplish little in changing externals. Trade and business relations quickly shift all the scenery on the stage.

We know quite positively that Lief Erickson, the Norseman, landed among the Indians somewhere on our Atlantic seaboard, but these chance Norse voyagers did not at all change the Indian's way of living, nor his way of doing. The sojourn of the Norsemen left apparently not one single relic behind, and we would not know that they had been here if they themselves had not told us. If any Asiatic people had really been in position to introduce a new way of building among the Indians, they would probably have introduced along with it rice, tea, and porcelain, not to mention pigs, chickens, and metals. They would have taken back maize, potatoes, and tobacco. Within eighty years after the landfall of Christopher Columbus, American plants like maize and tobacco spread over the Old World, from one end to the other and into all the corners, not merely into Spain and Italy, but into Africa and Tibet. In brief, an architecture cannot be introduced overnight by a chance arrival, while if there had been any communication, and business relations, other things than architecture would have made the jump, and the flux and the currents of ideas and arti-

facts would have passed in both directions. The fact that the ideas and inventions, the domestic animals and cultivated plants just mentioned, did not pass in either direction until Columbus came, is rather clear evidence that previous to his voyage, there had been no sufficient contact for the spread of ideas of any sort. That nobody had ever crossed the sea is a proposition that is not worth disputing. No business relations were established which took New World products into the Old, and it seems unlikely that Old World ideas could have come into the New. Such a plant as maize is of a thousand times more moment than a style of architecture, and a thousand times more likely to migrate.

It seems to my mind, in brief, that in the hasty dash we have just finished among America's ancient monuments, we have seen how one step in architecture follows another and grows out of it. Borrowing from abroad, if it occurred, must have been continuous over thousands of years. What the Indian actually did in his building operations was what he would have done if he had been feeling his way along. We witness among the aboriginal structures what seem to be experiments, and these timid essays marched only very gradually toward the finer masterpieces. The Indian built houses and other structures of fifty materials, and five hundred shapes, but when we look for evolution in the shapes and materials, stages in progress seem to be visible, and the advance from one stage to the one just next beyond it, seems to be in each case a simple matter. The one place where architecture seems to have gone ahead most rapidly seems to be on the Atlantic side of Central America. Here is perhaps the place where the Indian began first to build in stone, and where he later did his best work. I do not know why.

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# THE NATIVE COUNTRY OF THE MAYA —K'ICE INDIANS

By RUDOLPH SCHULLER

WHERE lay the original home-land of the great and widely extended Maya-K'iché-Indian Race? When, and under what circumstances did the separation of the Maya from the Huaxteca, the northernmost branch of this linguistic family, take place? These two questions, important as they are, have not as yet been answered in a scientific and acceptable way.

The well-known German scholar, Sapper, who made several trips through the different republics of Central America, especially Guatemala, tried to prove, upon extremely limited linguistic material, that the Huaxteca, together with the Cicomucelteca (whom he erroneously supposed to be linguistically nearer to the Huaxteca than to any other of the numerous Maya-K'iché tribes), must have constituted in former times a compact group in the southwestern corner of the present Mexican State of Chiapas. Plausible reasons which might have been advanced to account for the observed segregation in later times, are not to be found in Sapper's article, and he seems to have taken for granted, without further proof, this very hypothetical northerly migration of the Huaxteca across the vast central part of the republic to those regions in the northeast where, during the third decade of the sixteenth century, they were found by the Spanish conquerors. This entirely hypothetical migration of the Huaxteca from southwest to northeast has on several occasions been utilized, without further critical study, by other Mexicanists to further even stranger speculations.

In the first place, it must be pointed out that, as a general principle, in defining the position of one or more dialects within a given linguistic family, it is always a dangerous proceeding to rely solely upon the evidence afforded by apparent resemblances of words in one group to those of another, many of which may even be of only secondary value.

Secondly, granted for the moment that the language of the northern Huaxteca was more nearly related to the southern Maya-K'ičé dialect of the Cicomucelteca than to any other dialect of the same family, this fact would in itself in no way constitute proof that the Huaxteca had originally separated from the rest of the Maya-K'ičé people in this far-off southwestern corner of the Maya area. On the contrary, there is much positive evidence, never taken into consideration until the present time, that obliges us to seek for the primitive home of the Maya people in exactly the opposite direction, i.e., in the north and east, respectively.

One of the most important criteria bearing upon this point is, undoubtedly, the enormous territorial extension of the old Cuexteca-Huaxteca group which, from the most ancient times, seems to have lived in the region between 21-23° N., lat., and from the coast of the Mexican Gulf to 80° W. long. These thirty or forty thousand epigonoi, who are still living in a compact group in the southeastern part of the state of San Luis Potosí and in the northern part of the state of Vera Cruz, are thus only the residue, quite numerous it is true, of a people that in pre-Columbian times must have been much more numerous and occupied a still more extensive region. This is further corroborated by the fact that in many regions, for example, southern Tamaulipas and northern Hidalgo, which for centuries have been totally abandoned by the ancestors of the Huaxteca-Tének, there are to be found large Indian place nomenclatures that have evidently been derived from the linguistic treasury of the Huaxteca. Moreover, the results of archaeological researches tend to confirm this conclusion, for example, the occurrence of those remarkable stone idols with the well-known conical cap, the figure, often life-size, having a typical fan-like ornament fastened around the neck, as well as many other artifacts which have been excavated from the ruins of very old settlements, largely in the neighborhood of Tambacá-San Martín, Tanlacú-Tansabaque, Tamasopo-Micos, Valle del Maíz, and even north of Ciudad del Maíz and the Tantaón River, all of them on the extreme periphery of the ancient Cuexteca habitat.

From ethnological evidence we know that only a very numerous people are able to preserve their group characteristics when brought into close contact with a more highly civilized group. Thus, the ancient Nahua-Mexicans, in spite of close proximity for many centuries, did not greatly influence their Huaxteca neighbors, who were decidedly their cultural inferiors. The cultural bent of this great group resisted even the powerful influence of the Catholic Church, which was exerted upon the Indians of ancient Pánuco as early as 1530. Not even the continuous intercourse of the Huaxteca during the past three centuries with such alien elements as Mexicans of Spanish extraction and half-breeds of every color has produced noticeable changes in the intellectual and material culture of the present-day descendants of the ancient Cuexteca. Except for a very few vestiges of a matrilineal culture, probably traceable to the Totonaca, the modern Huaxteca-Tének are genuine representatives of a very old patrilineal-totemistic cultural nucleus.

The ethnological position of the Huaxteca-Tének is characterized by:

(1) the round hut, with a conical roof, for use by one family only;

(2) the small wooden bench or head-rest, placed under the neck when sleeping, which in former times had the very practical object of saving the numerous and complicated ornaments of the head and the neck[1] from being disarranged;

(3) the pitiable position of the woman in the family and within the group or tribe; matrimony by purchase, either by cash or by personal service of the prospective husband for his future father-in-law or other relatives of the girl he wishes to marry;

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[1] According to Father Sahagún, a small ornament made of feathers in the shape of a fan was fastened on both sides of the head near each ear, and another larger one of the same shape and made of the same material was fastened upon the neck. This positional disposition of the different ornaments in use among the ancient Cuexteca can easily be noted on many artifacts excavated in the above-mentioned old culture horizon.

(4) the extremely despotic powers of the present-day "First Judge" or "Cacique," an Indian authority who in reality is the successor of the former powerful cacique-shaman of the primitive totemistic-clan organization of the ancient Cuexteca, and who still disposes, often very arbitrarily, of the affairs and material interests of his subjects;

(5) the clearly recognizable survivals of a formerly highly developed cult of certain animals; continuity of descent, or affinity, in the sense of Father W. Schmidt: T'AT'AM, the first Zenzontli, the Mexican nightingale, being regarded as the first father of these Indians;

(6) the underlying totemistic motives in their national dances, for example, in the "Tiger," "Hawk," "Caiman," "Zopilote," "Badger" dances, and others;

(7) the strongly pronounced totemistic-patrilineal strata in the whole culture of the modern Maya-Masehual Indians of the Mexican state of Campeche,[2] the present very degenerated descendants of the former bearers of a once wonderfully high culture.

As influences from a matrilineal culture may be considered the following characteristics:

(1) the custom of head-hunting, according to Sahagún, though, as I have already pointed out in another place,[3] this Spanish missionary gathered his notes on the manners and customs of the Indians of this northeastern section in the capital of the country . . . that is to say, he received them at second hand and thus may have involuntarily confounded a great deal of the culture of the ancient Cuexteca with the material and intellectual culture of their matrilineal Totonaca neighbors;[4]

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[2] This statement is based upon my own observations made during a trip across the southeastern section of Campeche from Champotón to Icaiché, situated on the border of Guatamela, and thence back to Hopelchen, in the Province of Chenes (i.e., watering-places) in 1923.

[3] La Posición Etnológica y Lingüística de los Huaxteca, Resúmen. Por Rudolph Schuller, "El México Antiguo," p. 148, Tomo II.

[4] Several of the errors made by this great Spanish missionary were followed by the German scholar Krickeberg, especially in the last edition of Buschan's *Illustrierte Völkerkunde*, and also in his article "Die Totonaken" Baessler-Archiv, Berlin,

(2) the so-called house of the community (*casa de juntas, casa del pueblo*) which we find in the different Huaxteca Fracciones (little settlements) and the Men's House (the Club) of the matrilineal culture evidently represent analogous lines of development;

(3) Ixcuinána, the first woman, according to Huaxteca tradition, invented the planting of corn (maíz);[5]

(4) Mythological beings related to the matrilineal culture of the ancient Nahua-Mexicans are also the *gods of the pulque*, those four hundred rabbits whose origin, according to Seler and others, must also be ascribed to the country of the Huaxteca.

That the ancient Cuexteca-Huaxteca in pre-Columbian times were a very numerous and widely extended people is unanimously stated in the relations of the native Mexican and foreign chroniclers. *Huaxtecapan*, or "the country of the Huaxteca," seems to have been from earliest times one of those almost inexhaustible reservoirs of men, from which the ancient Nahua-Mexicans periodically got the numerous human sacrifices annually offered during their religious feasts in honour of their numerous gods.

Returning to the main thread of my argument, it is hardly necessary to point out the practically insuperable obstacles that would render almost impossible the mobilization of a very numerous primitive people, and complicate their march across a vast and largely unknown country, certainly in former times covered with dense, unhealthy and trackless virgin forests. Every step forward could have been won only with untold hardships. There were topographical difficulties in the way, lack of food and water, and, above everything else, frequent and unavoidable wars with hostile tribes, which surely would have opposed a stubborn resistance to this invasion of the advancing emigrants in search

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1918-22, where he states: "Spuren von Mutterrecht scheinen nicht vorhanden" (p. 46). I shall discuss this erroneous statement in another place. Equally inexact, also, is Krickeberg's opinion as to the origin of the so-called *juego del volador* (*volantín*). In the near future I hope to publish an article on this subject.

[5] Tlaçolteotl, the Goddess of Corn of the ancient Nahua-Mexicans, according to Seler, seems to have originated in the Huaxteca region.

of a new and better home. Delays in different places during the migration would have occurred, dependent as always upon both internal and external factors relating to the welfare of the emigrants. But such migrations leave behind them perfectly definite and ineradicable traces. Yet, the most careful archaeological investigations in southwestern and central Mexico, I believe, would fail to reveal traces tending to confirm Sapper's suggested southwesterly-northeasterly migration of the ancestors of the Huaxteca-Tének Indians.

Furthermore, Sapper's alleged migration of the ancient Huaxteca from that remote southwestern corner through the center of the country could not have been accomplished by small groups of people for the simple reason that a small group is neither physically nor psychically able in a given case to oppose successful resistance to other groups numerically vastly its superior. Such small groups would easily have been absorbed, or, as more frequently has happened in such unequal struggles, the men would have been killed and the women and children dragged off into slavery.

On the other hand, it is more than improbable that in those remote times large parts of southern and central Mexico were entirely uninhabited. All the accounts and reports of the early chroniclers which have come down to us unanimously agree that the Čičimeca-Otomí were the most ancient inhabitants of central Mexico. This statement also has the very decided merit of satisfactorily accounting for a copious topographical and geographical nomenclature that unquestionably belongs to the language of the Čičimeca-Otomí. This nomenclature, still existing in official compendia, etc., furnishes proof as to the former enormous territorial extension of the Čičimeca-Otomí and the tribes linguistically related to them, especially in southern and central Hidalgo, in Querétaro, in Guanajuato and in San Luis Potosí, where they have been, and partly still continue to be, the southern and western (i.e., northwestern) neighbors of the Huaxteca-Tének.

On the other hand, from the toponymy of Čičimeca-Otomí origin there can easily be reconstructed their former widely extended habitat. A glance at the accompanying map shows

how the Cičimeca-Otomí in the form of an arc, partly surround the habitat of their Huaxteca neighbors.

There can not be the slightest doubt that the Cičimeca-Otomí must have been expelled in very early times from the so-called *meseta central* and adjoining parts of central Mexico, doubtless owing to the invasion of this region by the Nahua-Mexicans. Yet, culturally speaking, the Cičimeca-Otomí do not appear to have been visibly influenced by their more highly civilized conquerors and expellers. Later on they may well have been brought under tributary conditions, but even this closer subjection to the ever increasing power of their Nahua-Mexican overlords does not seem to have had any influence whatsoever on the spontaneous development of their culture. This being the case, it is evident that this march of the ancestors of the Huaxteca-Tének from the remote south across the center of ancient Mexico, as suggested by the German geographer Sapper, would have come to a halt at the borders of the primitive home of the Cičimeca-Otomí, and every attempt to break through here would have been without avail.

Very closely connected with the separation of the Maya people from their northern kindred, the Cuexteca-Huaxteca, I feel, is the story of the pre-Nahua-Mexican inhabitants of the *meseta central*, the progenitors (?) of those people who built the Pyramid of the Moon at San Juan Teotihuacán (i.e., "where the gods used to assemble"), which, in later times, became the Mecca of the ancient Nahua-Mexicans. Dr. Manuel Gamio, under whose direction the greatest part of the excavations at San Juan Teotihuacán were carried out, and especially the reconstruction of the Pyramid of the Sun and the Temple of Quetzalcoatl, seems to be inclined to bring the Cičimeca-Otomí into connection with this once great cultural center.[6] Indeed, in one place he states explicitly: "*los primeros pobladores de Teotihuacán fueron los Otomíes.*"[7]

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[6] La Población del Valle de Teotihuacán (Secretaría de Agricultura y Fomento. Dirección de Anthropología. Poblaciones Regionales de la República Mexicana.) Tomo I, Vol. Primero. See "Introducción," p. 8.

[7] *Op. cit., loc. cit.*

Professor Beyer, on the contrary, believes Teotihuacán must already have been abandoned when the Nahua-Mexican tribes settled in these regions of central Mexico. He also has pointed out cultural relations between Teotihuacán and the Totonaca Indians.[8] The chronicler Torquemada,[9] relying upon an old Indian tradition, refers likewise to the sojourn of the Totonaca at Teotihuacán. Seler, however, does not seem to attach much importance to this obviously very old legend. Yet, be that as it may, without entering into purely fanciful speculations,[10] we can safely say that the invasion of the Nahua-Mexican tribes must have taken place in very early times and, probably, from the region later known as the Marquezado-Morelos; and further, that a logical and natural consequence of that invasion must have been a radical change in the ethnic and linguistic picture of the *meseta central* and adjoining parts.

One result was the successive expulsion of the primitive inhabitants from the center of the tableland, a great part of them surely having been pushed down toward the Atlantic coast. Let us note, however, in passing, that the complete occupation of those central parts of México by the Nahua-Mexican Indians and the final dislodging of the Cičimeca-Otomí and their kindred tribes from their primitive seats, as well as the great change thus produced in the ethnic and linguistic map of central México, was one of those historical processes, the final accomplishment of which may have taken many decades; nay, under certain circumstances, its fulfillment may have required even centuries. Unfortunately, we do not know positively whether the mixture of races and culture also happened at this time or not. Here we have another obscure problem in the history of the Indian groups of central México which perhaps can never be satisfactorily solved.

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[8] *Op. cit.*, p. 275; see also p. 274. And lately again in his paper "Sobre algunas representaciones de antiguos totonacas," Anthropos, XVIII-XIX, p. 257.

[9] Cf. Ceballos Novelo and Ramón Mena, La Población del Valle de Teotihuačán p. 69 and p. 293.

[10] As may be noted, for instance, on almost every page of Walter Lehmann's work "Zentral-Amerika." The so-called evidence, so far as I can see, totally erroneous, brought forward by Lehmann in order to prove the origin of the Mexican and Central American high cultures, must be discussed in another place.

Returning now to the subject of this paper, the original homeland of the Maya, I think that it may be accepted as proved, that when the former inhabitants of the *meseta central*, the Cičimeca-Otomí, were dispossessed of their ancestral homes by the Nahua-Mexican tribes and driven off the *meseta central* down into the region bordering the Gulf of Mexico, largely the present state of Vera Cruz, this great shifting of people forced a deep wedge into the Maya, who at that time were living as a compact group along the Gulf coast in close proximity to their kindred, the Huaxteca, and this movement opened up a wide breach between these two groups of the great Maya linguistic family which has never since been closed.

As among the primitive inhabitants of the *meseta central* and adjoining regions, in addition to the Cicemeca-Otomí and others, there must also be included the ancestors of the Totonaca. This raises another and highly important question, namely, as to what was the pre-Totonacan population of northern Vera Cruz, and this question is one for the archeologists to answer. Unfortunately, the greater part of this state, from an archaeological point of view, is almost entirely unknown.

However, there can be no doubt that the wedge driven into the Maya-Huaxteca by the Totonaca (and others?) later on must have been enlarged by the Nahua-Mexicans themselves, when they, too, moved toward the center and the south of the present state of Vera Cruz. It is even more certain that the separation of the Maya from their Huaxteca relatives took place ***before*** the development of the Maya high culture; and, finally, it is probable that the Maya-Huaxteca before their separation must have represented a uniform ethnological group, with a patrilineal-totemistic structure.[11]

In southern Yucatán and adjoining regions there thus occurred what has happened elsewhere in the life of races. The invader, culturally inferior, but numerically superior, took possession of a

[11] The strong indication of patrilineal-totemistic strata in the high culture of the Maya-K'iče I have already noted.

cultural complex, developing it and changing its form until it had been made to produce such wonderful temples and grandiose palaces as one sees today in Yucatán and Guatemala.

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# THE MIGRATIONS OF THE SENECA NATION

BY FREDERICK HOUGHTON

THE Seneca Nation of Indians is at present divided into groups widely scattered over the United States and Canada. The largest group occupies reservations situated in western New York. A smaller group makes its home among its kindred, the Mohawk and Onondaga, on the Grand River, in Ontario. A third group is settled far away from these on their reservation in Oklahoma. These present habitats of the Seneca are partly consequent upon migrations during late historic time, partly also upon little known but evident movements during early historic and prehistoric times.

The New York and Canadian reservations are the direct result of the hostility of the Seneca and others of their kindred toward the colonial Americans during the Revolution. At that time the home of all the Iroquois nations making up the Iroquois Confederacy was in central New York. Of these the Seneca, the western member of the Confederacy, lived in villages scattered through the beautiful Genesee Valley, and the valleys of Seneca and Canandaigua Lakes, and southward from these over the low divides into the valleys of the Chemung and the Allegheny Rivers. Detached villages existed in western New York in the valleys of Tonawanda Creek, Buffalo Creek and Cattaraugus Creek; and in Ontario some bands seem to have domiciled themselves on the Grand River at some time after they had expelled the Neutral Nation in 1651.

During the American Revolution the Seneca affiliated themselves with the English, and for four years carried on a fierce but unavailing border warfare against the frontier settlements of New York and Pennsylvania. As a consequence of this, a colonial army was despatched against them. One division of this army penetrated their country by way of the Susquehanna River, advanced northward through their outlying villages on the Chemung

River, burned these and fought a decisive battle there, then crossed the divide to the head of Seneca Lake. They followed this to its outlet, burning villages and devastating farms as they went until they reached the foot of the lake, where was the great Seneca town of Genundesaga. This they burned, thence pushed westward straight through the heart of the Seneca country. Eventually, they reached and burned the great western towns of the Seneca in the Genesee Valley.

Meanwhile, a second division had pushed its way up the Allegheny River, burning the Seneca towns as they found them, until they reached the great town of Buccaloons, near the present Warren, Pennsylvania.

These activities were carried on in the early autumn at a time when the cornfields which spread about every Seneca village were beginning to ripen. Not the least part of the activity of the colonial soldiers was directed to the destruction of these cornfields and consequently, when the colonials had returned to their homes, the Seneca, who derived their subsistence mainly from these corn fields, found themselves threatened with starvation. They were unable to secure aid from the other nations of the Confederacy, most of which had suffered similar devastation; and although several of the Seneca towns, Canawaugus, Caneadea and Nunda on the Genesee River, and Koyendage on Canandaigua Lake, had escaped discovery and destruction, these were unable to provide for the large homeless population of the other towns. Accordingly, they flocked in thousands to their allies, the English, at the nearest depot, Fort Niagara, where the English government provided for them through a terrible winter. In order to ease the burden, however, early the next spring the English commandant dispatched parties equipped with farming tools and seeds to various near-by localities. Part were sent with Joseph Brant and his Mohawk to the Grand River in Ontario. Some drifted back to their desolated fields along the Genesee River and the Allegheny River. Some established new villages along Buffalo Creek, Tonawanda Creek, Cazenovia Creek, and Cattaraugus Creek in western New York.

All of the new settlements of the disintegrating Seneca Nation

were determined directly by earlier movements on a smaller scale. The Grand River had been known to the Seneca for a century, for in 1669 they had a well established colony, Otinaouatoua, on the portage from Lake Ontario to the Grand River, and at that time this river was a well traveled thoroughfare to Lake Erie. The valleys of Buffalo, Tonawanda, and Cattaraugus Creeks in western New York had been well known to their colonists from a still earlier time and large villages had grown up before 1750 above the mouth of the Cattaraugus, at two or three points along Buffalo Creek, and on Cazenovia Creek. In the Genesee Valley the surviving towns of Canawaugus, Caneadea, Nunda, and Koyendage served as nuclei for new villages there, and the familiar flats of the Allegheny attracted others.

This forced migration of the Seneca from their ancient seat resulted in the present reservations. When the Seneca finally sold their claims to lands in western New York they exempted certain parcels surrounding and including these new settlements as well as their older villages in the Genesee Valley; and, although some of these reservations were eventually sold, those on the Cattaraugus, the Tonawanda, and the Allegheny, and at the Oil Spring still persist.

The thrifty villages, the fertile and highly productive farms and the spreading orchards of the Seneca country which, in 1779, aroused the admiration and wonder of their destroyers, were consequent upon a similar forced migration of the nation a century before. When, in the last half of the Seventeenth Century, the French King, Louis XIV, was dominating Europe, his far-reaching hand grasped at the control of America. Between his territory in Canada and that of his English rival lay the Long House of the Iroquois. At that time, as a century later, these were in alliance with the English and, with a strong grasp on the situation, Thomas Dongan, governor of New York, strove to keep these allies as a buffer against his aggressive French rivals. Of all the Confederacy the Seneca were at that time the most powerful, most warlike, and most arrogant. When, therefore, the French governor, Denonville, wished by a show of force to alienate these vigorous English allies and at the same time to punish them

for their recent overbearing behavior toward his agents, he launched a blow first against the Seneca. In a well-planned but unexpected campaign he penetrated the isolated Seneca country at Irondequoit Bay, harried the forces opposed to him, burned their four great towns and devastated their farms. So thorough was his work that the Seneca abandoned their ruined towns and trampled fields and created new homes. One large portion turned eastward and in the region between Canandaigua Lake and Seneca Lake built new towns. A second large group settled on the fertile and wide spreading flats along the middle reaches of the Genesee River. Gradually these settlements spread southward and westward. The eastern group followed up the Seneca Lake to its head, thence over the low divide to the Chemung. The western group followed up the Genesee River, passed over the divide to the Allegheny, thence down this valley until their farthest colony was well below Pittsburgh.

The towns of the Senecas when they were thus humbled in 1687 by the French, were, for the most part, grouped together in the fertile and delightful land between the Genesee River and Canandaigua Lake, mainly in what is now Ontario County, New York. These were not so much homes of the Seneca as headquarters, whence they fared forth on extended hunting and military expeditions. For two generations they had depended upon the trading posts at Albany and Quebec for their necessities, and as peltry was their only available commodity they had gradually become a hunting nation. This necessitated wide hunting grounds and scattered bands rather than the restricted farm lands and huddled villages characteristic of the nation at an earlier stage. As a consequence, hunting camps and colonies of Seneca grew up in the great wilderness about them, occupied more or less continuously by parties from the large towns. Thus it was that the colony of Otinouatoua was established in Canada in the abandoned country from which the Neutral Nation had been ousted. A village existed on Buffalo Creek in 1751, and its chief was influenced by Father Picquet to become a Christian. These were doubtless primarily bases for hunting parties, as was the village which La Salle found on the lower course of the

Niagara. All of these villages, and doubtless others, remained undisturbed by Governor DeNonville's army and became nuclei, as has been shown, for the later towns and the reservations of today.

The villages and scattered colonies, the life of which had been so rudely interrupted by Governor DeNonville, had not been long lived. They merely marked pauses in a migratory movement which had been going on for many years. Each of the four great towns of 1687 was preceded by other large towns of an earlier period, and these, in their town, were preceded by still others, so that the period between the coming of the first traders and the desolation of the towns in 1687 is marked by a series of sites which reach back from the great towns of DeNonville's time to towns inhabited by the Seneca of a prehistoric Stone Age. This series of sites shows the movements of at least three large communities northward from the shelter of the hill country about Honeoye Lake and Canandaigua Lake to the more open lands about Victor and Lima. This movement was gradual and caused not by war as were the later movements, but by the growing strength of the nation which made less necessary the protection of the high hills, and more necessary a larger farming area. This gradual northerly movement was along the valleys of the streams, and was continued from the time the Seneca entered the Genesee Valley until it was rudely interrupted by the French.

At the time of the two great migrations of 1687 and 1779, brought about by the invasions of the French, and of the colonial Americans, their new homes were established in each case in country well known to them and uninhabited by other nations. In each case the land selected for their homes was dominated by them and, excepting the Grand River Valley, it was owned by them. Their migrations were therefore simple matters, in that no hostile nations impeded their progress. This was not so in their earlier migrations.

The entry of the Seneca into their historic seats in central New York was the end of a long continued migratory movement from the west. The sites of their prehistoric, pre-European villages form an easily traced path which plainly delineates this migration.

The latest pre-European Seneca village was at Richmond Mills, near Honeoye Lake. This village, in all probability, was occupied by the same community which later became the village of Gannounata of 1687. A hilltop village just west of Canandaigua Lake, in Bristol, similarly marks the beginning of the town of Canagora, and the Belcher site near Honeoye Lake seems to have been the beginning of Totiakton of 1687. There is no recorded knowledge of any sites in the immediate vicinity to the southward of these three sites, although the hill country about the heads of Hemlock, Conesus, and Honeoye Lakes has never been thoroughly searched for such sites. Where the immediate predecessors of these sites are, we, therefore, cannot say. In the Genesee Valley, however, to the westward of these sites, there is a series of pre-European sites which can only be of early Seneca origin. The first undoubted pre-European Seneca site on the path of the migration is at Portageville, just above the falls of the Genesee River. This is a typical hilltop fort, the embankment of which still encircles the top of a small steep-sided hill. Still earlier, and farther up the Genesee, are two sites in Allegheny County, at Belmont. Between Belmont and the Pennsylvania state line the path is marked only by small scattered sites, but west of Wellsville, crowning the divide between the Genesee River and the Allegheny River, is a site of undoubted early Seneca origin. At Bolivar, still farther west, there is a site which, though now covered with debris from oil well drilling and so unavailable for examination, seems from the descriptions given by collectors to be of Seneca origin.

West of Bolivar there is a break in the series. This may be due to the absence of sites or it may be due only to the fact that the territory has never been searched. It is not until Sugartown Creek, in Allegheny County, is reached that the pathway is again evident. That this break may be only due to our lack of knowledge seems possible when it is considered that there are three hilltop fort sites at and near Sugartown which have never before been recorded, and that one of these was unknown to the owner of the farm upon which it is situated. West of Sugartown, a fort is said by collectors to crown a hill above Little Valley, north of Sala-

manca, in Cattaraugus County. This, if it exists, and I believe that it does, has never been recorded.

West of Little Valley is the Conewango Valley. Here, crowning a high hill at Ellington, in Chautauqua County, is an undoubted Iroquoian fort. Near the foot of the hill which it crowns lies an equally undoubted Seneca village site of pre-European age. One of two forts on Clear Creek, above Ellington, is indubitably Iroquoian, and bears such a relation to the Ellington fort that it may reasonably be considered its predecessor.

Crossing the divide westward to the valley of the Cassadaga, we find at Sinclairville and Gerry a group of forts of undoubted early Iroquoian origin, whose characteristics are identical with those of the Ellington and Sugartown forts. Beyond this group of forts there is a break in the series, coincident with a lack of knowledge of the hills of the southwestern part of Chautauqua County, and no other site is known until we reach the farthest corner of our state where, on a high hill above Findley Lake and exactly on the State Line, we find a tiny hill fort. This has every characteristic which marks the more eastern forts.

Although there can be no doubt that the forts in the Cassadaga Valley and at Findley Lake are Iroquoian, it is not at all certain that they are of Seneca origin. The artifacts found on the village site at Ellington, in Chautauqua County, the site at Wellsville, in Allegany County, and the sites at Belmont, although separated by a long distance, are identical in all respects, and artifacts from any one of these sites cannot be distinguished from articles found on two sites in Ontario County, both of undoubted Seneca origin. The forts have never yielded enough artifacts to enable one to form a judgment. In our present state of knowledge the sure characteristics of Seneca sites cannot be said to extend west of Ellington. Yet, beyond this point are sites which cannot easily be attributed to any other people.

Unlike the later migrations which led the Seneca into familiar and unoccupied country, this early migration seems to have been through a country already occupied by a hostile people, through which their course led, not along easily traveled water courses, but along the crests of the highest divides, where every stopping

place must be fortified. Of this there can be no reasonable doubt. In no place is there any evidence to show that they descended into the valleys for any length of time or to establish a permanent village.

Now, it is reasonable to assume that the people who lived on the sites, who threw up the earthen wall on the crest of Ellington Hill, who fortified the hill slopes in the Cassadaga Valley, and who formed the black refuse pits in the fort above Findley Lake were not autochthonous. They came to these places, and before they came they had acquired a culture which differentiates them from the peoples among whom they had established themselves. East of Cassadaga there seems every reason to believe that they were the people to be known long after as Seneca, Sonnontouan, the Hill People. Whence came these eastward faring people? Were they always the "People of the Hills"? What was the origin of the Seneca?

The answer to these questions seems to lie with the Erie Nation. When the French priests in the Huron mission wrote of their delight on learning that there existed other nations, kindred of their Huron hosts in tongue and culture, they recorded the name of the Erie Nation. This people, which was seated along the southern shore of Lake Erie, was of Iroquoian stock, numerous, warlike, and sedentary. In 1654 the priests at Quebec recorded the events of a war which in that year was waged by the Iroquois Confederacy upon the Erie, a war which ended with the conquest and assimilation of the Erie by their ferocious kindred. At this time their most eastern village may possibly have been on Cattaraugus Creek. A village of an earlier date, but still post-European, existed at Ripley on the cliffs of Lake Erie. It is fair to assume that some, at least, of the sites said to exist between Cleveland and Sandusky are of Erie origin. Certainly, a village site at the mouth of Chagrin River, just east of Cleveland, is of Erie origin. To occupy this territory the Erie must have entered it from one of two directions, west or east, for there seems to be no evidence of any similar culture to the southward of it. If they came from the east during pre-European times they would have left a trail of Stone Age village sites east of Cattaraugus Creek,

and these would have changed to a later type of site, marked by European articles as they advanced westward. There is no evidence of any such westward movement. On the contrary, the latest Erie villages are the most eastern, just as the latest villages of the Neuter are the farthest east. Both these nations seem to have drifted eastward.

The most reasonable theory of the origin of the Seneca is that they were offshoots of this Erie nation, or of the people who later became the Erie. In the eastward movement of the Erie, or of the people who were later to become the Erie, a small body split off somewhere between the shore of Lake Erie and the foothills of the Allegheny Divide, and instead of following the shore, it crossed the Divide into the Allegheny Valley. Here they would come at once into contact with Algonkian nations then domiciled there. This party moved steadily forward toward the east, establishing small villages on the crests of hills, and for security against their Algonkian enemies they fortified these hilltops. The band grew steadily in numbers year by year and continued its slow advance eastward.

The culture which they had in common with the Erie they retained. Their arrows they still armed with small keen triangles, utterly different from the heavy notched points of their Algonkian neighbors. They retained the common Iroquoian characteristics of sedentary village life, distinct entirely from the wandering habits of the people with whom they came into contact. Their pottery still showed the bands of design common among the Erie, but, little by little, these characteristics were modified by the molding effects of their changed environments, and eventually they crystallized into a separate nation, no longer Erie, but Sonnontouan, the Hill People. Yet the habits of generations of hill-crowning villagers persisted, and to the last their villages were built upon the crests of the high hills.

Eventually, their eastward movement brought them athwart the Genesee Valley, down which a portion turned. Another band seems to have persisted in its eastward movement until they were turned by the valleys of the smaller lakes, down which they moved, and this band was so independent that at the formation

of the Iroquois Confederacy the two bands demanded and were granted two representatives in the Council.

That this splitting off of a band is not an unusual phenomenon may be inferred from the westward movement of these same Seneca at the time of the Revolution. At that time bands had pushed down the Allegheny and Ohio and had established colonies as far away from their main stock as Shenanje, far below Pittsburgh. It can hardly be doubted that under normal aboriginal conditions a distant colony of this kind, if persistent, would have gradually lost touch with its main body and become a separate nation.

BUFFALO, N Y.

# WAS HOCHELAGA DESTROYED OR ABANDONED?[1]

By W. J. WINTEMBERG

WHEN Champlain arrived at what is now the city of Montreal in 1603 he found no trace of the village of Hochelaga, which had been visited by Cartier in 1535. During the interval between the visits of the two explorers Hochelaga had entirely disappeared. The disappearance of the village has led some writers to assume that it was destroyed. Sir J. W. Dawson, for instance, repeatedly speaks of its destruction as an assured fact.[2] In this paper I will endeavor to show that there is no certain historical evidence of the destruction of the village and that it is more likely to have been abandoned than destroyed.

The assumption that Hochelaga was destroyed seems to rest almost solely on the statement of two Indians who accompanied Maisonneuve to the mountain top, after the founding of Ville Marie, in 1642. According to the *Relation* of that year,[3]

> Two of the chief Savages of the band stopped on its summit, and told us that they belonged to the nation of those who had formerly dwelt on the Island. Then stretching out their hands toward the hills that lie to the East and South of the Mountain, "There," said they, "are the places where stood Villages filled with great numbers of Savages. The Hurons, who then were our enemies, drove our Forefathers from this country. Some went toward the country of the Abnaquiois, others toward the country of the Hiroquois, some to the Hurons themselves and joined them, and that is how this island became deserted.

[1] Read at the May, 1925, meeting of the Royal Society of Canada.

[2] Fossil Men and Their Modern Representatives, third edition, London, 1888, pp. 42, 44, 46, 66, 71, 74, 92, 101, 166, 447, 448. See also Rev. John Maclean's Canadian Savage Folk, Toronto, 1896, p. 327; and the following papers by W. D. Lighthall: (1) A New Hochelagan Burying Ground Discovered at Westmount on the Western Spur of Mount Royal, Montreal, July–September, 1898, Montreal, 1898, p. 5; (2) Hochelagans and Mohawks, a Link in Iroquois History, The Transactions of the Royal Society of Canada, Second Series, 1899–1900, vol. 5, Section II, 207; (3) The Westmount "Stone-lined Grave" Race, *Ibid.*, Third Series, 1922, vol. 16, Section II, 73; and (4) Hochelaga and the "Hill of Hochelaga," Ibid., Third Series, 1924, vol. 18, Section II, 95.

[3] Burrows edition, Jesuit Relations, 22:215. See also Charlevoix, Histoire et Description Generale de la Nouvelle France, Paris, 1774, 354–355.

Now it will be observed that Maisonneuve's Indian informants did not mention Hochelaga or that it had been destroyed. They merely claimed that their ancestors had been driven from the country. Furthermore, they were members of the Ononchataronon tribe, who were Algonkians,[4] although their name is Huron.[5] The language of the Hochelagans, recorded by Cartier, was Iroquoian. The archaeological remains, found at the site, show that the culture also was Iroquoian. The Ononchataronon, therefore, if they were Algonkian, as is generally believed by ethnologists, can not have been the Hochelagans visited by Cartier, and the statements of these Indians must refer either to a time prior to the Huron-Iroquois occupation, or to a later period. The fact that an old man, mentioned in the *Relation* of 1642,[6] claimed that his grandfather had tilled the soil and raised corn on the spot, does not necessarily imply that the Ononchataronon "were not originally Algonkians," as one writer thinks.[7] Other Algonkians, those of Allumette island, for instance, cultivated the ground and grew corn.[8] The Ononchataronon may have acquired their knowledge of corn culture from the Huron, for they are known to have wintered near them and probably also came into contact with them in summer. At any rate, they had evidently been familiar with the cultivation of corn long enough to give the old man of the *Relation* of 1642 the impression that his people had always cultivated it.

From what I can learn from Dawson's papers[9] and his *Fossil Men* no evidence of the destruction of the village was discovered at the site of Hochelaga. Some, however, might say that the ashes, charcoal, charred corn and charred beans, found in the

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[4] See Relations of 1641–42, 21:117; 1642–43, 24:269, and 1646, 29:145.

[5] See Charlevoix, Journal d'un Voyage fait par ordre du Roi dans l'Amérique, etc., Paris, 1774, 5:162.

[6] Loc. cit.

[7] Lighthall (2), 208.

[8] Voyages of Samuel de Champlain, trans. by Charles Pomeroy Otis, Boston, published by the Prince Society, 1882, 2:69.

[9] (1) Notes on Aboriginal Antiquities recently Discovered in the Island of Montreal, Canadian Naturalist and Geologist, Montreal, 1860, 5:430–449; and (2) Additional Notes on Aboriginal Antiquities Found at Montreal, *Ibid.*, 1861, 6:362–373.

refuse deposits of the site, were an indication of the destruction of the village by fire. I have heard this said of sites in Ontario; for the idea of destruction, with its associated horrors—the butchering of the inhabitants and the scalping and torturing of prisoners,—seems to appeal to the popular imagination more than the sober truth. The ashes and charcoal, as perhaps I need not explain, are merely the remains of the fires for cooking and for warming the houses, while the charring of the beans and corn may either be accidental, or, in the case of the corn at least, due to the Iroquois custom of parching the corn before it was stored.

Judging from the general lack of information respecting such a practice, it does not even seem to have been customary for the early Iroquois to destroy or burn their villages after they abandoned them. I have found only two references, both of which are of a very late period. When Frontenac, for instance, with seventeen hundred French and five hundred Indians, marched against the Onondaga, the latter, considering that their town was not worth defending, on account of the fact that it had been occupied for fourteen years and that it was full time to remove to another site, burnt the town, so that the French found only the smoking ruins.[10]

We come now to the question: Was Hochelaga abandoned? The broken condition of most of the artifacts, found at the site, is the only archaeological evidence which would suggest that the place was abandoned. Notwithstanding the lack of more positive evidence, I believe that it is more likely that the village was abandoned than destroyed. The Iroquois are known to have found it necessary to remove their villages to more suitable locations every ten, twelve, fifteen, twenty, thirty, and forty years,[11] owing to the fertility of the corn lands becoming exhausted and the depletion of the fuel supply. The same causes were probably responsible for the abandonment of Hochelaga.

[10] Morgan, League of the Ho-dé-no-sau-nee, or Iroquois, new edition, New York, 1904, vol. II, note 25 on page 194. The other reference is in Colden's History of the Five Indian Nations of Canada, London, 1755, vol. I, p. 81.

[11] See the Jesuit Relation of 1639 (Burrows edition), vol. XV, p. 153; Champlain, op. cit., vol. III, p. 161; and Beauchamp, History of the New York Iroquois, New York State Museum, Bulletin 78, 1905, p. 152.

There is no certain means of learning how long Hochelaga was occupied. The depth of the accumulations of refuse and the large quantity of broken pottery are uncertain indications of the length of occupancy.[12] The same quantity of debris might be left by a large population in a short period of time. We can only guess how long the village was occupied after 1535; but even if it was inhabited for twenty-five years after Cartier's visit, there was still ample time for the wooden palisade and the bark covered wooden framework of the houses to disappear through the slow process of decay, so that not a trace would remain in 1603. There is the possibility, too, that when the village was abandoned, the houses and palisades were demolished and that the material was used in the construction of the houses and defensive works of the new village.

I think it will be safe to conclude that the assumption that Hochelaga was destroyed is unwarranted by the facts and that it is more likely to have been abandoned than destroyed. But, while I maintain that there is no certain evidence of the destruction of the village and that the Ononchataronon were not Hochelagan, I admit that the statement of Maisonneuve's Algonkian informants that their ancestors occupied Montreal island and that they were driven from thence by the Hurons, is in the main true. The expulsion, however, probably occurred before the founding of Hochelaga as an Iroquoian village. While we now have very little archæological evidence,[13] there is no doubt that a systematic search would reveal abundant evidences of a pre-Iroquoian Algonkian occupation of Montreal island. The Algonkians certainly preceded the Iroquois in parts of Ontario and New York, and it is reasonable to suppose that they were the earlier inhabitants of Montreal island also.

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[12] Dawson (1), said: "The remains of pottery and other objects were in such quantity . . . . as to indicate a long residence of the tribe which had inhabited the spot," p. 452.

[13] Lighthall, in his paper on "The Westmount 'Stone-Lined Grave' Race," describes a method of burial which does not seem to be Iroquoian and is probably Algonkian. The late Prof. F. W. Putnam in 1857 discovered a shell-heap somewhere along the side of Mount Royal, which may have been left by Algonkians.—A Problem in American Anthropology, Annual Report of the Smithsonian Institution, Washington. 1901. p. 475.

# A NEW TYPE OF CARVING FROM THE COLUMBIA VALLEY

By JULIAN H. STEWARD

EXCAVATIONS conducted in the Columbia Valley by the University of California during the summer of 1926 have brought to light a new type of aboriginal carving, which is sufficiently unique to merit special attention. For the opportunity to do this work, we are indebted to the generosity of Mr. Henry J. Biddle of Vancouver, Washington.

The carvings comprise human, animal and geometric figures and are executed for the most part in bone, but occasionally in slate and antler or horn. The source of the material is two cremation pits. One of these, from which most of the material was derived, is situated on Miller's Island in the Columbia River at confluence of the Columbia and the Deschutes Rivers, and is associated with several Indian graves. The other pit is on the Oregon shore, about ten miles below Miller's Island, where nine other cremation pits and several burials occur. All of the pits and burials at the latter site had been rifled by relic hunters, but a thorough examination of the material remaining showed that only one of the cremation pits contained carved bone fragments. These closely resemble those from Miller's Island.

Owing to the broken and charred condition of the material in the pit on Miller's island, a large part of which had been destroyed by the fire or fused with melted sand and human bones, the carvings were badly broken and the pieces gleaned were very fragmentary.

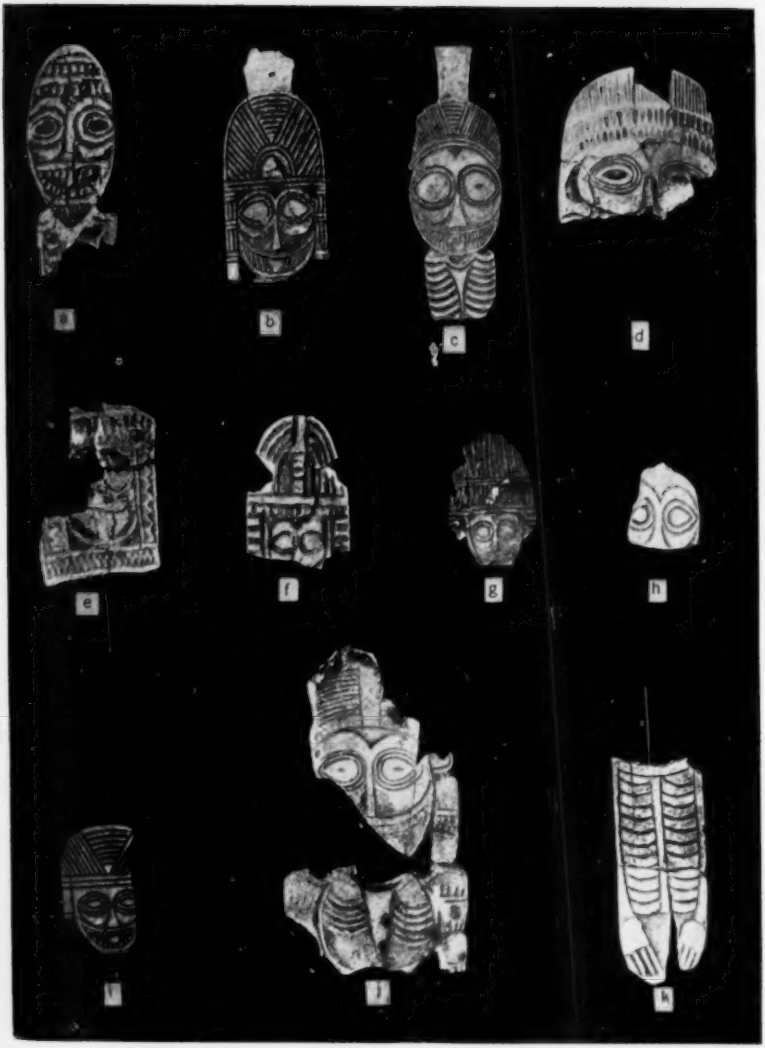
Most striking among the carvings are the human figures, specimens of which are shown on plate I. These, with two exceptions noted below, are all done on flat bone and are notable for the accuracy and neatness of workmanship. A very definite local style with a highly conventionalized mode of representing the various features is evident. The face is essentially the same in each specimen. The eyebrows are in each case clearly defined

and continue downward into the nose. The eyes are almond-shaped and are represented by two or three concentric lines. A cheek line always appears on each side just above the mouth leaving the cheek about the size and shape of an eyebrow, but inverted. The exaggerated crescent-shaped mouth is open and grinning, with the teeth, usually in two sets, clearly demarked and the tongue appearing in the center. The headdress is unusually elaborate; often it is almost Egyptian in appearance. It generally rises to a considerable height above the forehead and is decorated with groups of zigzag lines or parallel-hatching, and is topped off, in a majority of cases, by a "comb." Figures *b* and *c* show this "comb"; in *d*, *f*, *g*, *h*, *i*, and *j* it has been present but is broken off. The headdress frequently continues down on each side of the face in narrow bands,—figures *b*, *f*, *g*, *i*, *j*. The remainder of the body has been lost in most instances, but where it is preserved it also shows a highly conventionalized type. The ribs, variable in number, stand out on each side with a breastbone in the middle,—figures *a*, *c*, *j*, *k*. The arms hang by the side and the hands and fingers, squarish in shape, are marked by simple lines,—figure *k*. (Several fragments not given in the plate show only parts of the body, as ribs, hands, or parts of the face.)

Figure *e*, plate I, varies somewhat from the usual form in the square setting of the face and in greater conventionalization. But the type of features, so far as they are discernible, is identical with the others. Part of another square face precisely similar to *e* was also found.

Figures *h* and *k*, plate I, are probably parts of one figure as the color and texture of the bone and the size are the same. The mouth and headdress, however, are missing.

The two exceptions mentioned above to this general method of carving the human figure are small pieces carved in the round, —figure *h* of slate and *i* of bone, plate II. The conventionalized style, however, is the same as in the flat pieces and merely shows adaptation to the rounded surface. In figure *h* the concentric eye lines may be seen on either side of the straight, narrow nose, with the eyebrows above and the cheek line below, and below the cheek line, part of the grinning mouth showing the upper set of teeth




PLATE—I Bone Carvings from Miller's Island. *a–j*, human heads(*c* is of steatite); *a*, *c*, and *j* show part of the body with ribs; *k*, human body showing ribs, arms and hands. (all 3/4 natural size).

and part of the lower set to where the break occurs. Similarly, in figure *i*, the eyes appear as concentric rings, the nose is rather broader than in *h* and continues upward into the eyebrows, and part of the headdress remains above. The cheek line is lacking but part of the mouth is shown with the upper teeth and the tongue in the middle.

Of the other pieces shown on plate II, *a* and *c*, worked in bone, and *b*, in slate, may be conventionalized headdresses for the fragments of curved lines appearing below the horizontal lines in each piece suggest eyes or eyebrows. These differ, however, from the headdresses shown on plate I not only in being slightly larger but in the greater use of parallel arcs and zigzag lines for ornamentation. Figures *d* to *g* are extremely problematic. They are all of bone and are carved in the round with longitudinal lines and encircling horizontal and zigzag lines. Apparently these designs are purely geometric. Figures *j* and *k* are also of bone. The thickness of each of these pieces is about half the width; the design is on one side only. The ribbon-like pieces shown in figures *l* and *m* are probably parts of one strip, with the intervening piece lost. These, too, are of bone and are carved on one side only.

The figures on plate III are all of bone. Figure *e* is in the form of a small rosette, slightly hollowed on top (part of the rim is missing) but broken off at the stem. It suggests a conventionalized flower. Figure *d* is somewhat more deeply incised than the other fragments, and is probably purely geometric in design although the concentric rings on the upper piece suggest eyes. The two fragments shown probably fit together in the position indicated. Figures *a*, *b*, and *c* are all of solid bone, probably whalebone. The totemic-like face on the flat piece shown in figure *a* is carved on both sides. Figure *b*, also flat, is carved on one side only. Figure *c*, which is round in cross-section, has a small, crude face near the bottom.

Text figure 1 is the only piece shown from the cremation pit on the Oregon shore mentioned above. It is in the possession of Mr. Luhr Jensen of Dee, Oregon, who kindly permitted me to sketch it. It is of bone, carved on both sides and is highly similar to figure *a*, plate III.

The interpretation of these figures is somewhat difficult. Some elements of the art style can clearly be traced to neighboring areas. For example, the faces on figure *a*, plate III and the text figure 1, undoubtedly show connection with the totemic figures of the Northwest Coast art. And figures *d* to *g*, plate II, suggest hornspoon handles from this region. The zigzag lines and diamonds, figures *l* and *m*, plate II, are suggestive of Plains or Plateau

FIGURE 1. Handle of whalebone war club. (2/3 natural size) Found 5 miles above The Dalles Oregon. (In the possession of Mr. Luhr Jensen of Dee, Oregon.)

art, although the zigzag may also be traceable to the Northwest Coast. The human figures, however, stand out unique both in style and in workmanship. It is true that the use of concentric rings for the eye-form suggests Northwest Coast art; but if the whole style arose from the Northwest Coast art or any form of it, it has certainly had a high and very divergent local development.

In some ways the human figures resemble much cruder human figures occurring in this region. The continuation of the nose upward into the eyebrows is a very common feature both in pictographs occuring throughout the Columbia Valley and in

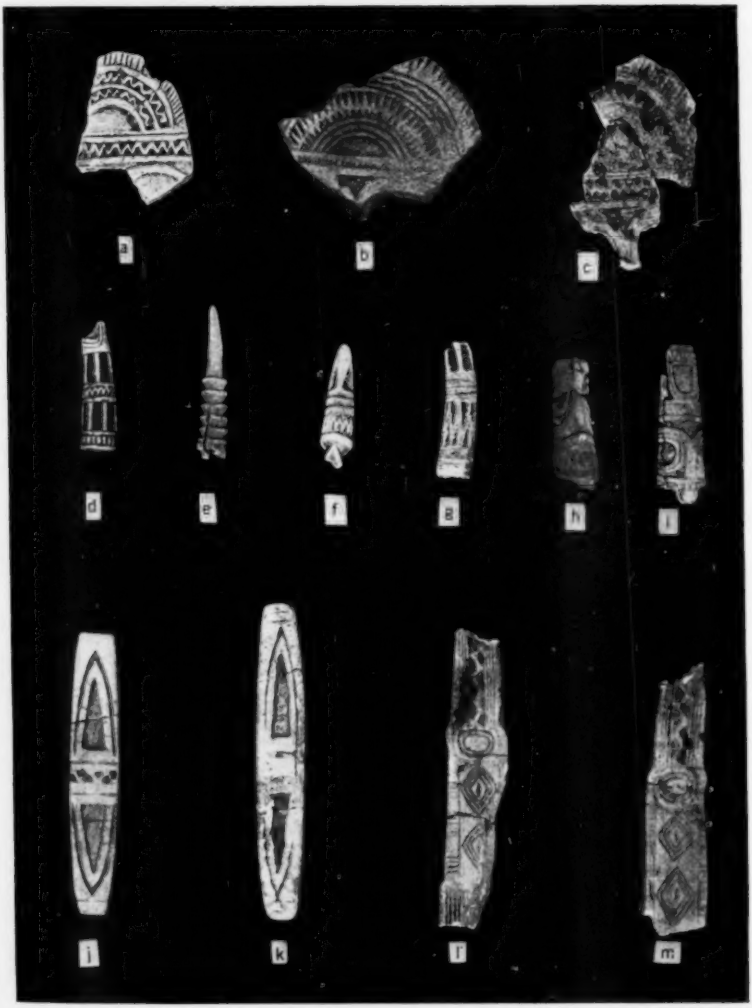



PLATE II.—*a* and *c* (bone) and *b* (slate) are probably headdresses; *d*-*g* (bone) are problematic; *h* (slate) and *i* (bone) are human heads; *j* and *k* (bone) are probably gamboling sticks; *l* and *m* (bone) are problematic, (all 7/9 natural size.)

PLATE III.—*a*, *b* and *c* are probably whale bone clubs; *d* is a geometric design deeply incised on flat bone; *e* is a "rosette" carved in bone. (all 2/3 natural size).

occasional stone carvings. Text figure 2 shows this feature in a stone statuette from near Lyle, Washington. See also, figure *b*, plate III. It also appears in several stone pieces described by Harlan I. Smith,[1] particularly one from twenty miles below Portland and another from Courchan Gap. In the former, there is also a slight indication of ribs. Many of the crude wooden effigies from the Columbia Valley, used either as grave posts or

FIGURE 1. Stone statuette from near Lyle, Washington. (Photograph by courtesy of B. C. Markham, The Dallas, Oregon.)

house ornaments, bear ribs. The zigzag lines of the headdress may also find a slight parallel in the headdress of the stone statuette from Lyle, text figure 2, or in the radiating lines occurring in many of the human figures in pictographs and petroglyphs in this region.

But the only true parallel I find to these figures is a single piece described by Smith from a grave near Tampico, Wn., in the Yakima Valley,[2] which is, however, slightly cruder, especially

[1] Smith, Harlan I. Archaeology of Georgia Gulf and Pugent Sound, Mem., A.M.N.H., v. 4, pt. 4: 424–431.

[2] Smith, Harlan I. The Archaeology of the Yakima Valley, Anthro. Papers of the A.M.N.H., v. 6, pt. 1: 100–105, 127–128, fig. p. 133.

in the carving of the face. The ornamentation of the figure from the Yakima Valley, he believes, is traceable to Plateau influence. The zigzag lines of the headdress are thought to be conventionalized feathers, while the various groups of parallel hatching may be hair ornaments, possibly of buckskin, with decorations of dentalia and other shells. The portions of the headdress appearing on each side of the face, giving in some instances, an Egyptian cast, may either be decorated hair rolls or hair done up in buckskin. It is also possible, however, that the headdresses may represent something similar to the animal scalp headdresses formerly in use among the Nez Perce.[3] I find nothing, however, which gives any clue to the meaning of the "comb."

The use of the human figures is purely conjectural. While they may be effigies, I see no reason for assuming any other use than one of pure ornamentation. They may have served a purpose similar to the larger wooden figures mentioned by Lewis and Clark which were hung up as ornaments in the house or placed in the graves but apparently "not worshipped."[4]

I am very hesitant at hazarding a guess as to the meaning of the small pieces carved in the round shown on plate II, figures *d* to *g*. In some ways they suggest the horn-spoon handles of the Northwest Coast, and the concentric circles appearing at the top of figure *d* may be part of a totemic figure. On the other hand, the zigzag lines connect it rather with Plateau art. It is conceivable that these are parts of the headdress belonging to such faces as appear in figures *h* and *i* on the same plate.

Figures *j* and *k*, plate II, are probably bones used for the hand-game or guessing game. Other fragments of this type show that these bones were probably paired. Data presented by Stewart Culin[5] show that paired bones of this size and general shape were used for the hand game throughout the entire western part of North America, and that in many instances that material was solid bone, the pieces varying in length from $1\frac{3}{4}''$ to $3\frac{3}{4}''$. The

[3] Spinden, H. J. The Nez Perce Indians. Mem. Amer. Anthro. Assoc., v. 2, pt. 3: 229.

[4] Lewis and Clark. Original Journals of the Lewis and Clark Expedition, 1905, v. 3: 166, 176, 178–179, 183.

[5] Culin, Stewart. Games of the North American Indians. Ann. Report, A.B.E., v. 24, 1907: 44–335.

bones shown here are 2⅜″ and 2½″ in length, respectively. While it was a widespread practise to ornament the sticks by carving or painting, I find none so elaborately carved as these nor with precisely this design. It is conceivable that these sticks were used in the dice game, but as a rule the sticks for the dice game are of wood and are considerably longer than those for the hand game.

The pieces shown in figures *l* and *m*, plate II, resemble Plains or Plateau art rather than Northwest Coast art. They are so thin and fragile that any practical use for them can hardly be imagined and it is more likely that they were purely ornamental.

Figures *a*, *b* and *c*, plate III, and text figure I are very likely fragments of war clubs made of whalebone. Large, spatula-shaped clubs of whalebone were very common on the Northwest Coast, particularly on Vancouver Island where the handles were carved, most frequently with the totemic figure of the eagle or thunderbird.[6] Text figure 1 and figure *a* plate III are highly similar to the carved handles of these clubs. Figure *b* may be the lower end of a club, for many clubs were decorated with an inverted face of this type on the lower end.[7] On the other hand, the general shape of the fragment rather suggests that, if part of a war club, it was the handle. Again, it may have been simply an effigy. If figure *c* is part of a war club, it is more akin to the type used in the interior of British Columbia. Two clubs from near Kamloops, B. C., shown by Smith are circular in cross-section and are carved with faces similar to this.[8] In these two, however, the face appears at the top of the club.

Figures *d* and *e*, plate III, are probably purely decorative in purpose. Figure *e* slightly resembles a pipe fragment, but is made of bone and is not drilled through. Figure *d* seems to show admixture of Plains or Plateau and Northwest Coast art.

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[6] Smith, Harlan I. Archaeology of the Gulf of Georgia and Puget Sound, Mem. A.M.N.H., v. 4, pt. 6: 403–412 (section by Boas on "Whale Bone Clubs").

[7] Smith, Harlan I. An Album of Prehistoric Canadian Art. Canada Dept. of Mines, Bull. 37, Anthro. series, no. 8; plate XXII, fig. 3, plate XXIII, fig. 4, plate XXIV, figs. 1, 2.

[8] Smith, Harlan I. Archaeological Collection from the Southern Interior of B. C., Government Print. Bureau, Ottawa, 1913.

# FACTS AND THEORIES CONCERNING PLEISTOCENE MAN IN AMERICA

By PINY EARLE GODDARD

THE hour has at last arrived for an extensive reorganization of our conception of the peopling of America and of secondary movements on the two continents. That human beings were living in North America during Pleistocene times is no longer open to doubt. Worked flints lying in undisturbed Pleistocene formation under a fossilized skeleton of an extinct species of bison must mean that men were living in Texas at that period.[1] The exact division of the Pleistocene in which this bison became extinct and the stratum was laid down may be left for future settlement. This find is but the confirmation of numerous other ones all pointing to the same conclusion, but against which some objection has been raised.

In reality all these years the scepticism should have been in the other direction. Linguistic evidence has been in existence for nearly a century which made the peopling of America in recent times improbable. Such great diversity of speech calls for many milleniums. The cultural evidence is in the same direction. The land-bridges were almost certainly in the north and in all probability at the Northwest, that is Behring Strait. The crossing there is now possible for men in small boats or in winter on the ice. But under present conditions it is hard to imagine the crossing of Behring Straits and moving by land down over Alaska of a sufficiently large number of people to account for the present population of America. People travel that region only by boats in summer or with sleds in winter. That Alaska was more inviting for settlement or that travel there has been easier since the retreat of the last ice-cap is improbable. As far as a large movement through Alaska is concerned the Pleistocene did not end 30,000 years ago when the retreat of the ice in Nebraska may be supposed to have begun,

[1] Definite Evidence of Human Artifacts in the American Pleistocene, Harold J. Cook Science, Nov. 20, 1925, pp. 459-460.

but when that retreat had reached the far north. How long that took we may sometime know, for in many localities the years are easily counted in the clay deposits left by the retreating ice.

According to the older view a sufficient number of people crossed Behring Straits to furnish a hundred or more independent linguistic stocks already differentiated in the Old World; not a single pair as pure biology would require. These people slowly moved southward through North America, not waiting to populate it densely, into Mexico, along the narrow neck of land forming the isthmus of Panama, down the coast of South America to Patagonia and arrived there in time to be contemporary with an extinct ground sloth. At a somewhat later time, maize was domesticated together with many other native American plants, and only after that the great civilizations of Peru, Yucatan and Mexico Valley grew up.

The whole conception is, and has been fantastic, for the time allowed was much too short. People who are inclined to be critical and conservative should have doubted that man was recent, and have thrown the burden of proof that the finds in Pleistocene formations were not to be accepted on those who raised doubts concerning them. There is nothing that makes the man who stands out for man's being recent, while certain proof to the contrary was lacking, more sound and scientific than the man who demands ample time to explain the conditions as we knew them.

Two objections to the antiquity of man in America have usually been raised. First, skulls and other remains found in old formations were condemned if they did not show a low order of mankind. This belief was based on finds in central and western Europe. Other mammals have survived from Pleistocene times with little change, why not man? The second objection has been that man must have come with a neolithic horizon and the neolithic horizon in France is post-glacial. Again the reasoning was unsound, because the center of cultural development was not likely to have been France but far to the east and south, perhaps in Africa or southern Asia.

Under the great ice cap, there are almost no known remains of a people previous to those now inhabiting the country. Prac-

tically all evidences of man were wiped out by the ice. At the southern borders of the ice finds have been made from time to time. The petrified human femur, with cuttings on it, taken from the Trenton gravels may now be accepted as of the origin indicated. The Argillite culture described by Skinner and Spier is now referable to the Pleistocene. There are finds as well in Nebraska. South of the ice in Texas and Florida finds have been numerous. It was there that man could live during the Pleistocene and his remains endure. The material from the caves of Kentucky and Arkansas may well be very old. It is in the Southwest, another region which escaped the ice, that the largest and most definite archaeological record of man in America has been uncovered. There is some reason to suppose that the bow and arrow were not known in America by the earliest people. The Basket Makers seem to have used only the spear thrower, with an appropriate dart. Harrington found darts, not arrows, in certain of his Arkansas caves. Curiously enough the two flints found below the bison in Texas were too large to be arrow-points. The bow may have been invented in America or have reached in a second movement of either people or culture.

But at last we know man was here in Pleistocene times. The period that has usually been assigned must be doubled at least and probably multiplied by ten. How shall we readjust our theories? Man came across with the other mammals of Old World origin: the horses, the elephants, the camels, when there was an ample land-bridge and when both Siberia and northern North America were enticing in climate and sources of food. When the ice advanced, if not before, men and the other animals moved toward the south, and due to a great reduction of exposed land they were perhaps forced to cross into South America. During the last glaciation these people were confined to the tropics where they were compelled to seek an increase of their food supply. Dense populations, and *only* dense populations produce highly organized civilizations. Maya civilization is now given but a few milleniums but the Maya, at the founding of the cities now in ruins, were an advanced people with a calendar system and a method of recording it graphically. They were in no sense primitive.

Just south of the ice in North America there was a sub-arctic flora and fauna with man included. At that time man hunted bison and probably caribou. As the ice retreated slowly, imperceptibly, the fauna followed it, especially those animals adapted to a sub-arctic climate and flora and also those men who were accustomed to live on these animals.

To the south other animals and men, who if not already agricultural, were accustomed to the more temperature regions, remained behind. The withdrawal of the ice produced a migration toward the north. The Athapascan-speaking peoples divided. Those who were living on caribou went north with them, and are now in the Mackenzie and Yukon valleys, where they still hunt the caribou and catch fish. The Beaver, also Athapascan, on the Peace River until recently chiefly hunted the wood bison. Others speaking related dialects remained behind in Kansas, Oklahoma and western Texas. Siouan people moved in to fill up the gap left between these separating tribes. They too left remnants behind in the south, the Biloxi and the Catawba. On the west of the Rocky Mountains Shoshonean peoples moved northward nearly to the Canadian border. On the Atlantic coast there is some evidence that the Eskimo were once far south and that they withdrew toward the north followed by the Algonkian peoples who also at a later date pushed westward toward the Rocky Mountains.

The movement of the Iroquois was probably much later. The Algonkian movement toward the south along the Rocky Mountains may have also not been completed until a few millenniums or even centuries ago. Also the movements into Labrador were late. But there the ice age has only recently ended and the country does not yet furnish an easy living.[2] In broad outline, something of this sort almost certainly happened.

[2] It may well be that California and the Pacific Coast north toward Puget Sound was available for human occupation long before the ice disappeared at the same parallels east of the Rocky Mountains. A warm ocean current would have produced such a result.

Much of the above is speculative, but some hypothesis is necessary to clarify the new problems that will immediately arise under the new conditions of a long occupation of America. A good hypothesis is one that explains many facts and is contradictory to none.

The measure of linguistic change since these migrations began is roughly the difference between Chipewyan and Navajo, between Biloxi and Santee Sioux, between Delaware and Cheyenne. What have been known since Powell's work as linguistic stocks were already well differentiated at the end of the Pleistocene. If the less evident relationships which have recently been pointed out by Kroeber and Sapir are actual, and some of them probably are, they go far back of this readjustment of peoples and may be due to separations 100,000 or more years ago.

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# THE ASSOCIATION TEST AS A METHOD OF DEFINING RELIGIOUS CONCEPTS

By LESLIE SPIER

HALF a dozen years ago I recorded a word-association list among the Havasupai of Arizona. Dr. Robert H. Lowie has briefly commented on this list in his *Primitive Religion* (p. 280). He points out that it shows the usual characteristics of such lists among ourselves; coördination, contrast, predication, etc. His interest in these associations lies in showing how the substitution of concepts and the building up of religious ideas may occur through association. My reason for obtaining the list was different: to attempt to define the vague religious concepts of the Havasupai.

Religious concepts are always necessarily vague, and this is especially true of the Havasupai. Here are a people poor in culture, with the barest of ceremonial life, shamanism of an unspecialized sort, few magical practices and tabus, and no localized spirits nor deities of any importance. In short, although they are neighbors of the religiously rich Hopi, they share the lack of cultural development of the Basin tribes.

They also show the same inability to formulate their culture, the same apathy and reticence in describing it, which Dr. Lowie is convinced is characteristic of all the typical Basin people. This is especially obvious when we contrast them with the Plains or Pueblo Indians. There is none of the sharp characterization of mythical beings, none of the stereotyped forms of vision experiences or of rituals, none of the purposefulness of Plains and Pueblo religious life. To be sure, a poor culture does not readily lend itself to precise formulation, but the Havasupai leave their religious concepts at exceptionally loose ends.

It is usual to record the religion of a people in terms of a formulated norm. But it is obvious that no two individuals among them hold precisely the same series of beliefs. How com-

monly shall we get the same answer on the meaning of the resurrection or the sin against the Holy Ghost among ourselves? It seems rather that there is a whole cluster of special forms of each of these beliefs. It is therefore legitimate only to describe the religion of a people as the sum of all the beliefs held by every one of them. It is equally true of the individual, that he has a fringe of ideas associated with the central notions. Their totality constitutes the concept for him.

I had thought to obtain the associations for a series of such ideas among the Havasupai and in this way to define the range and character of their beliefs more closely than their statements and my incidental observations would permit. If Kent and Rosanoff's experience with the reactions of normal subjects holds here, we might well expect the response words to be drawn from surprisingly small group of common reactions.[1] This inquiry was not carried out systematically, but the method may be of interest.

A list was drawn up in which the words referring to things religious were scattered among a larger number of indifferent words. I tried this only with my interpreter, Jess Checkapanyega, who had a fair command of English, had had some schooling, but who lived in the old style and had implicit faith in the native religion. He caught the idea of what was wanted readily enough. The list and his response words follow. The words for which I especially wanted associates are marked with an asterisk.

| *Cue*[2] | | *Response*[3] | |
|---|---|---|---|
| tacpĕ'' | six | — | |
| gȧθŏ'k | burden basket | — | |
| djĭtai'ĭgȧ | father | ȧpa'ª | man |
| natȧkʷe'pĭgȧ | night | nakʷŭmkʷŭ'mkĭ | lot of darkness, very dark |
| ȧtcu'dĭgȧ | winter | mu'nĭgȧ | cold, freeze |

[1] G. H. Kent and A. J. Rosanoff: A Study of Association in Insanity (American Journal of Insanity, 67, 1910).

[2] The phonetic system is that of the Phonetic Transcription of Indian Languages (Smithson. Misc. Coll., 66, 1916, no. 6) with the breve indicating the close vowels.

[3] These responses are almost solely of the synonymous, defining, or qualifying type. There are only a half dozen possible cases of contrast and as many homonyms.

| | | | |
|---|---|---|---|
| n$_y$ĭmsă´vå | white | ĭnya´gå | black |
| sŏl | finger | mi´´i | foot |
| dŭtvua´djĭgå | quipu | gwesi´vĭgå | the counting of something |
| tc'aukå | cedar tree | gwewa´djå | something growing |
| pahamĭ´lĭgå | brother-in-law | åpa´[a] | man |
| huga´θå | cup and pin game | gwehu´[u] | the head of something[4] |
| xuwa´gå | two | — | |
| åkwa´gå | deer | åmu´[u] | mountain sheep |
| *gåθiyĕ´´ĕ | shaman | gwegĭsåpŏ´´ | they know how to do everything |
| kwaiyă´l | knife | kwaĭnyădja | piece of black obsidian |
| su´ĭdjĭgå | older brother's son | teyu´ĭdjå | a relative |
| måsi | girl | hama´n | child |
| *måta´vĭgå | north[5] | n$_y$åhamĭ´dĭgå | hunting |
| djĭka´vĭgå | mother's brother's son (man speaking) | dĭtka´tĭgå | cut into two or more pieces |
| *k$^e$e´djĭmpi´k | unconscious | n$_y$ihamă´djĭgå | little bit dead[6] |
| no´hovĭgå | the hiding game | dåsmålaĭ´ĭvĭg | playing |
| *ĭnya´[a] | sun | ĭnya´djpa´gå | sun shining |
| måsma´ | sinew | såvåma´[a] | roots |
| *såma´[a] | spirit | gĭθiye´ | shaman |
| kua´go | chicken | kwa´loyau´å | (any) chicken |
| gĭ´nĭgå | younger sibling | howa´giå | partner |
| *teya´dj | corn | ma´gå | eat it |
| *iyuwai´å | heart, soul | kŏdåu´dĭgå | spherical |
| kåwe´vĭgå | south | midåmi´dĭmå | pretty straight[7] |
| gweåo´nia | a trap | gweoi´å | something to catch with |
| o'oga´djiå | fire drill | o'ogwi´diå | slow match |
| hŏmtĕ´´ĕ | squash | gwegåo´lå | pumpkin or squash |
| kåmwĭ´dĭmå | old woman | påk$^i$´ĭ´ | woman |
| *kwimă´djĭgå | rain[8] | åhà | water |
| mådi´gå | beans | ma´gå | eat it |
| *ămi´yĕ | ghost | kwĭ´djådi´å | ghost |
| måpŭ´k | knee | sukŭmwĭ´d | ankle bones which protrude |
| qåqω´t | fox | djĭpai´yå | all sorts of animals |

[4] The "cup" of this game is a rodent skull.
[5] The land of the dead is in the north.
[6] This is the literal meaning of k$^e$e´djĭmpi´k.
[7] That is, in the middle of the heavens.
[8] Rain is prayed for.

| | | | |
|---|---|---|---|
| ahua´djĕ | Apache | ĭtcahua´ | Yavapai, enemy |
| halĕθu´ia | nine | vua´vĭgȧ | ten |
| *Pagio´vȧ | God (?) | Pagio´gȧ | Dead Man Puller[9] |
| mukwa´ | dipper | gwepe´yȧ | something to dip with |
| tcĭpa´vȧ | twine or coil basket stitch | gwetovȧdju´dĭvȧ | something to make a ring or spiral |
| *vȧta´vĭg | lightning | vȧu´ĭg | thundering |
| midȧmi´dĭgȧ | straight | — | |

I think this is a failure so far as my objective was concerned. Most of the responses seem purely verbal. I know too little of Havasupai to say how frequently these are common verbal couples (as Adam and Eve, etc.). Yet, if tried on a larger scale it might give results. It would be certain to indicate what the common associates of these significant words are. Obviously it should only be used with unsophisticated natives and there the linguistic difficulty presents a barrier.

I am well aware that associated words are not the same as associated ideas, but they do give some clue. The difficulty is in distinguishing the more significant responses from the verbal ones. This presupposes a greater familiarity with the culture than we usually have. But this is only a degree more difficult than in the use of such test among ourselves, where the observer must assume that he can distinguish the significant among his subject's varied responses.

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[9] Literally.

# TRADE RESTRICTIONS IN EARLY SOCIETY

BY WILLIAM CHRISTIE MAC LEOD

## I

THERE is an event in the history of the Five Nations Iroquois which exhibits in interesting fashion the fact that greed, duplicity, and cunning in international affairs or diplomacy may appear full blown out of the conditions of life and the psychology of men of the Age of Stone. In the symbolism of this aboriginal American league of nations, the union of tribes was likened to one of the long houses of the natives, and called, The Long House. The Seneca, in the west, were, symbolically, Keepers of the Western Door. The Mohawk, in the east, were, likewise, Keepers of the Eastern Door. The Onandaga, safely ensconced geographically in the center of the confederated tribes, embraced the capital of the confederacy, and this, with its council fire, was the fireplace of the long house.

Toward the middle of the Seventeenth Century the French of Canada were trading with the Onandaga by shipping merchandise not along the direct route down the valley of the Mohawk, but around Lake Ontario straight into the Onandaga country. It seems clear from the eventual protest of the Mohawk that if the French had shipped through Mohawk territory they would have had to pay toll for passage through to the Onandaga. Moreover, it seems that there was nothing in the regulations of the native confederation requiring that goods entering confederacy territory must enter through one of the symbolical doors of the confederacy, the symbolism of which evidently reflected merely the facts of frontier military defense. Manifestly, for the French to pay toll in the Mohawk Valley for goods destined for the Onandaga would mean a higher price to the Onandaga. In their eventual protest the Mohawk appear to have been attempting an innovation in the policy of the confederacy by insisting that French goods from the St. Lawrence must enter by their "door" and pay toll as they passed through. Their insistence that the French follow this

procedure was accompanied by a thinly veiled threat that if it were not followed, war would be the consequence. Their delegate to the French was reported as saying:

> Is not the door the proper entrance to the house; not the chimney or the roof of the cabin,—unless the visitor be a thief and wishes to surprise the people? We constitute but one house, we five Iroquois nations. We build but one fire. And we have through all time dwelt under the same roof. Well then,—will you not enter the cabin by the door, which is on the ground floor of the house? You should begin with us, the Mohawks. If you begin with the Onandagas, you would be entering through the roof and the chimney. Have you no fear that the smoke may blind you!—our fire not being extinguished! Do you not fear to fall from the top to the bottom!—having nothing solid whereon to plant your feet!

It would have been interesting to have had note of the reaction of the Onandaga to these claims, and of subsequent developments in the matter. The Mohawk already had the office, residing in one of their sachemships, of Collector of Tribute from subjugated peoples, an office continually increasing in importance. Located on a frontier of strategic importance, it is apparent that, if the confederacy had continued its natural development unchecked by European intrusion, some interesting struggles for power within the confederacy would have appeared. As it was, the organization of confederacy was anything but democratic in any full sense of the word.

The Mohawk protest was recorded in 1652. This was quite too early for the Mohawk concept to be considered as reflecting anything but aboriginal notions. The development of this concept of toll-taking from traders, however, is evidenced as aboriginal by its general distribution throughout both agricultural and non-agricultural North America. In our consideration of non-agricultural groups we shall show that it is a right generally conceived of as pertaining to land ownership, and merely an aspect of the native land tenure.[1]

[1] The Mohawk protest is from The Jesuit Relations, cited in the Appendix to Lloyd's edition, 1904, of Morgan's League of the Iroquois. About this time the Iroquois were taking toll from western Indians who desired passage across Iroquois territory to trade at Albany. See Wraxall's *Abridgment*, 1759 (of the lost Albany records), and p. xliii of McIlwain's introduction to the Harvard reprint of Wraxall, 1910. Cf. Lawson, Carolina, 1715, p. 101; and Lederer, *Discoveries*, 1791, pp. 21 22, 29, on trade restrictions southward of the Iroquois.

It seems that in aboriginal America, another type of restriction on trade obtained; a type definitely evidenced, however, only for the natives of the Huron Iroquois confederacy of the St. Lawrnece Valley. The trader abroad, who discovered a new line of trade, or a new field for trade, had a monopoly right to this line or field. In the middle of the Seventeenth Century it was noted by a Jesuit among the Hurons[2] that:

> Several families have their own private trades, and he who was the first to discover it is considered master of that line of trade. The children share the rights of their parents in this respect, as do those who bear the same name [mother-sib?]; no one goes into it without permission; which permission is given only in consideration of presents [i.e., payment]; he associates with him as many or as few as he wishes.

The note of another Jesuit may refer to this type of monopoly,[3] or perhaps merely to the type conferred by geographical position in territory owned. He writes:

> The Arendaranons are one of the four nations which compose those whom we call the Hurons. It is the most eastern nation of all and is the one which first encountered the French and to whom in consequence the trade belonged according to the laws of the country. They should enjoy this alone; nevertheless, they find it good to share it with the other nations.

## II

The bureaucratic national and federal organization (usually with the clan or sib as the unit of representation), typical of the peoples of agricultural North America, along with the associated national (tribal) and federal overrights in the matter of land tenure, and the national and federal control of boundaries, is most probably the consequence of the diffusion of political concepts which moved northward from the Central American areas of advanced civilization along with the agricultural complex. In non-agricultural North America, and in those parts of agricultural North America latest brought under the influence of the agri-

[2] *The Jesuit Relations*, v. 10, pp. 224-226.

[3] *The Jesuit Relations*, v. 20, p. 19; also v. 21, p. 177. The Huron country was destitute of the raw materials used in making wampum and the finer arrowhead materials, and of copper. Copper and agate arrowheads were obtained in Michigan, and traded with the maritime Algonkian for wampum and such. See D. B. Reed, The Hurons, *Transactions of the Canadian Institute*, 1889-90.

cultural complex, the family persisted as the unit of political representation. Where the sib obtained unmodified by the agricultural complex, the family, of course, was unilateral rather than bilateral. Wherever aggregation and political unity of many families obtained, it existed in the form not of the bureaucracy typical of the region of the agricultural complex, but in the form of a feudalistic type of pyramiding of family heads, and sept heads, topped by the tribal chief who was always the particular representative of both a family and a sept. One may exemplify this by comparing, say, the political organization of the Haida with that of the Omaha. The family was, typically, the owner of its own territory, limited not at all, or but slightly, by overrights pertaining to the larger political unit; and where such overrights obtained they assumed a feudal rather than a bureaucratic national form.[4]

Anyone wishing to travel, for any purpose, across the territory of a family or band had to pay the family owner or the feudal (or quasi-feudal) lord or chief for the privilege, the payment in a sense being equivalent of a fine for trespass.[5]

In the great Northwest, the Hudson Bay Company early found that the Stone Age aborigines had very definite boundary and trade regulations. The Company's attempts at times to set themselves above native law occasioned much strife and some bloodshed.[6] The natives of this region seemed to be universally eager, not so much to take toll on goods in transit over their territory, as to forbid the transit of traders altogether, with a view to carry the goods themselves as middlemen between adjacent groups.

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[4] I have elaborated on this in a paper in the *Proceedings of the International Congress of Americanists*, 1924 (in press). The fact that the Tsimshian, as evidenced by Boas and Barbeau, were independently tending toward the evolution of a bureaucratic state where the phratry played a prominent part as a representation unit is sufficient to indicate that the diffusion of concepts of political organization with the agricultural complex does not explain *all* the development of political organization in agricultural North America. One can leave much room for independent development and still feel that the above generalization is warranted by the facts.

[5] See for example, F. G. Speck, *Northern and Eastern Algonkian Social Organization*, 1917 Proceedings of the American Sociological Society; *Social Life of the Northern Algonkian*, Memoir 70, Canadian Geological Survey, 1915, pp. 4, 17. Galbreath, in Dawson: *Tribes of the Yukon*, Canadian Geological Survey, 1887, p. 2,

If a group were too weak to prevent passage of traders from a neighboring group, as was frequently the case, one group might then be in a position to act as middleman over an unusually wide territory, cheating its weaker neighbors out of their rights to serve as middlemen between it and the groups beyond. The interior Tagish Tlingit, for example, had been "from time immemorial" situated in a position geographically to intercept the trade between the coast at Lynn Channel held by the Chilkat Tlingit, and the Athabascans of the interior, but they "have not been strong enough to levy a toll" or to insist on the right to forbid passage and act themselves as middlemen. They were, instead, "dominated" by the Chilkat, and "*kept poor in goods and spirit.*"[7] Their condition recalls that of the Tsetsaut (Wetalth) of Portland Inlet, who were "harassed" by the Cape Fox Tlingit to the north of them and exploited in trade by the Nassqa to the south; for

> the Nassqa claimed the trade of the Wetalth, meeting them at stated seasons and taking their furs in trade at their own evaluation, and giving them what they pleased of other products in return. In this way the Wetalth were *kept very poor, and little better than slaves.*

When the Europeans came into the region, the Nassqa forbade the whites to trade with the Wetalth except through the Nassqa as middlemen.[8]

The diversification and segregation of types of desirable natural products on the northwest coast was very marked, and the

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and Emmons, *The Tahltan Indians*, Un. of Pa. Pubs. in Anthropology, 1911, p. 7, afford notes on this practice for the Northwest. Emmons tells of a Tahltan chief who wished, in the early days of the Company, to descend to the coast through territory of the Stikine to see a steam-ship anchored off the mouth of the river; permission to descend the river, with a safe-conduct, however, was given by the Stikine Indians only upon the payment of five hundred skins! Galbreath notes that the Nassqa once employed in the Canadian gold mines near Dease Lake on land owned by the Tahltan, might kill beaver for food, but had to give the skins to the owners of the land. Similar consumption of meat but surrendering of skins upon mutual agreement for reciprocity is noted as provided for in the boundary agreements between the Indians and Eskimo of Alaska by Dall (*Alaska and its Resources*, 1877, p. 144.)

[6] See for example, Simpson, *Journey*, 1841–42, pp. 125, 127.

[7] Dawson, p. 14; Dall, pp. 32-33.

[8] Emmons, pp. 21-22. Cf. Galbreath, p. 2: "The right to trade with the Tahltan was restricted by hereditary right or custom to two or three families of the Stikine coast Indians."

various native tribal economies had developed on the basis of active intergroup trade in local specialties to the point that the maintenance of the standard of living of each tribe was to a considerable extent dependent upon this trade. Some tribes were so dependent upon it that they could scarcely exist, or not at all, in the territory occupied by them, if they were cut off from intertribal trade, while excessive exploitation by the profit-taking of powerful neighbors who insisted unjustly on acting as middlemen would impoverish them so far as all the comforts of life went. There were, for example, the Kitselas (Gyispaqlaots) Tsimshian of the upper Skeena River, located just below the Kitiksan Tsimshian (Gyitksan) of the edge of the plateau, but above the Tsimshian tribes of the river below. The Kitselas:

> were not permitted to descend the river for trading purposes below the first fishing village of the group below them, and in like manner they themselves restricted the Kitiksan to their own country above the canon. This position of middlemen was their life, *for although their food supply of salmon was sufficient, their narrow strip of river country was poor in every other product.*

The Hudson's Bay Company in time founded a trading post on the plateau, at Hazelton, which furnished the Kitiksan with all they needed, and the Kitselas trade was ruined, with the result that they found life insupportable in their old home and migrated. They forced the Hudson's Bay Company, in 1886, however, to pay them for their ancient exclusive right to trade with the Kitiksan.[9]

On the northwest coast, property rights in beach fronts included property right over the seas stretching beyond, including outlying rocks and fisheries.[10] The owning group had the right

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[9] Boas, *The Tinneh of Portland Inlet*, British Association for the Advancement of Science, 1895; C. T. Emmons, *The Kitselas of British Columbia*, AMERICAN ANTHROPOLOGIST, 1912, p. 471.

The Hudson Bay Company attempted to establish a similar inland post in the Tahltan country which would trade with the Athabascan of that region without the use of the coast tribes as middlemen; the coast tribes sent parties inland which destroyed the fort (Simpson, p. 125).

[10] Dawson, *The Queen Charlotte Islands*, Canadian Geological Survey, 1879, pp. 113-117. Niblack, *Indians of Southern Alaska*, U. S. National Museum Report, 1888, p. 334.

to prohibit the passage of the canoes of traders through the waters of its coast, a right, however, which could be enforced only by the more powerful tribes. Sproat writes of the Nootka tribes[11] of western Vancouver Island:

> The coasting intertribal trade is not free, but is arbitrarily controlled by the stronger tribes, who will not allow weaker tribes to go past them in search of customers; just as if the people of Hull should intercept all the vessels laden with cargo from the north of England for London, and make the people of London pay for them an increased price, fixed by the interceptors.

When the Clayoquat failed in an attack on the Kyyoquat, an equally powerful Nootka tribe further up this coast, the Clayoquat decided that it was "necessary to stop all trade to the north in the direction of the Kyyoquats."[12] Of these practices in their effect on the intertribal slave trade Sproat[13] noted that:

> As it is the practice of powerful tribes to prevent the canoes of smaller tribes from passing their villages in search of customers, the price of a slave increases at each stage as he is conveyed along the coast to the best market.

When Captain Cook reached Nootka Sound native canoes poured in from tribes all along the coast. There were enough stranger Indians at the sound to insist on free trade for themselves with the strange vessel. But the village chief who owned the waters of the sound, ordered the strangers to stand off and all purchases of iron and other goods made from Cook had to be made through the natives owning the Sound as middlemen. On the visits of other ships later, Indians from as far away as Puget Sound sometimes came up to Nootka Sound to trade, and their obligation to use the natives of Nootka Sound as middlemen continued to be recognized by the strangers.[14]

In conclusion, we shall merely observe that these facts indicate that *the intergroup struggles of the hunters and agriculturalists of the Stone Age North America were, to some extent, more or less pacific struggles for markets.* Not only the greed for sources of raw materials, but the eagerness for new markets, tended to bring

[11] Sproat, *Scenes and Studies of Savage Life*, 1867, p. 78.
[12] Sproat, p. 195.
[13] Sproat, p. 92.
[14] Jewett, *Narrative*, 1815, p.36; Curtis, *The North American Indian*, v. 11, p. 63.

about war, *with a resulting commercial exploitation of the weak by the strong*. Much else might be said concerning economic evolution on the basis of the facts presented and summarized, but the above stands out as, in present day discussions, as of particular significance.[15]

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[15] Consider the facts in relation to those discussed in my volume *The Origins of the State Reconsidered in the Light of the Data of Aboriginal America*, Phila., 1924, for instance; all of these data certainly tend to do away with much of the distinction between "civilized" and "primitive."

Italics in the above quotations are not in the originals.

# STARS AND CONSTELLATIONS OF A PAWNEE SKY MAP

By RALPH N. BUCKSTAFF

THIS Sky Map is in the collection of Pawnee material at the Field Museum of Natural History at Chicago, and I am indebted to that institution for the photographs used in this paper. The map was found in a sacred bundle among other things common in these collections. This chart is oval in shape, made from a piece of tanned elk skin about 15 by 22 inches in size. One end is colored with red and the other brownish yellow. According to Dr. Ralph Linton, of the above-named Museum, this map is at least three hundred years old.

The stars are represented by a four-pointed figure and drawn in five different sizes which are indicated by the letters *a*, *b*, *c*, *d*, and *e*. This would mean as many different magnitudes. Taking the magnitudes of the stars in the eleven constellations, they are divided as follows: Of the first, we find eleven, the second are nine in number, while forty-four are shown as third. The other two classes were not counted because they are placed at random. The figures represented by some of the groups are crude owing to the fact that the Indians did not have any accurate knowledge of drawing.

Down through the center of the map may be seen a stream of stars of the fainter magnitudes, which is true of most of the suns of the Milky Way as we see them with the unaided eye.

The star groups on the right side of the division are similar to those seen in the summer skies. This half of the map is marked at the extreme end with a band of brownish-yellow color.

The constellations on the left side of the Milky Way are typical of the winter heavens. This end of the oval is marked with a reddish-brown band.

The eleven groups that appear on the map have been traced with an unbroken line. For comparison, the constellations as we know them are outlined with dashes and the stars shown by circles.

The V shape of Taurus is shown in Figure 1 by the stars marked *a*, *b*, *c*, *d*, *e*, *f*, and *g*. Zeta Tauri, Alpha Tauri, Theta Tauri, Gamma Tauri, Sigma Tauri, Epsilon Tauri and Tau Tauri. (*a*) is the third magnitude star Zeta, (*b*) Aldebaran first magnitude, (*c-d*) probably the double star Theta, (*h*) then would be Gamma. The stars forming the other side of the V would be (*e*) Delta, (*f*) Epsilon, and (*g*) Tau.

Near the position shown by *h* is the variable Lambda Tauri which ranges from 3.3 to 4.2 magnitude. This star might have been much brighter at one time.[1]

To the right, Figure 3, is a group of seven stars *a*, *b*, and *c* that resemble the Pleiades and about in the same position in respect to Taurus. If we look at the Pleiades in the evening of late March, they will be found as indicated by the drawing, the four stars forming the square pointing down to the horizon.

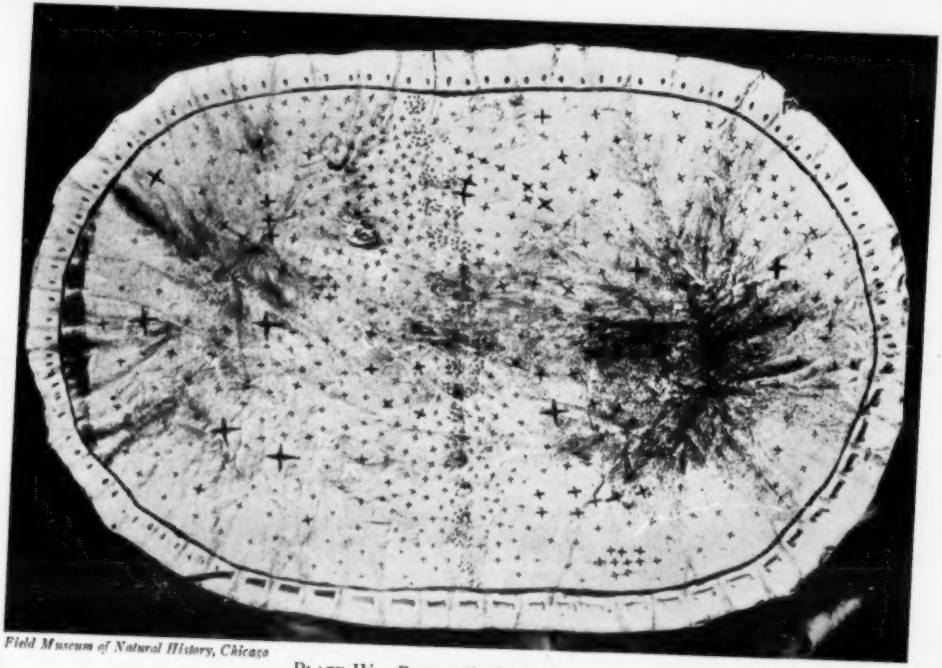
The stars shown in Figure 2 resemble closely the bright suns in the Orion group, (*a*) the first magnitude star Alpha Orionis, (*b*) Beta Orionis, (*d*) Rigel, (*c*) one of the stars in the belt and (*e*) Kappa Orionis; there are, however, within this area several groups of three stars in a row, either one of which might represent the belt of Orion. The relation of these three constellations, Taurus, Pleiades and Orion, to each other is quite accurate.

These stars are reversed in regard to their position to the Milky Way.

Drawing lines around the stars shown in Figure 4, we have a geometric pattern similar to Auriga and including the stars Alpha Aurigae, Beta Aurigae, Theta Aurigae, Nath and Iota Aurigae of that constellation, (*a*) being Capella, (*b*) Beta, (*c*) Theta, (*d*) Nath and (*i*) Iota. The position of this group of stars in relation to Orion and Taurus is not correct, being above them in the sky. It is, however, correctly drawn in relation to the Milky Way.

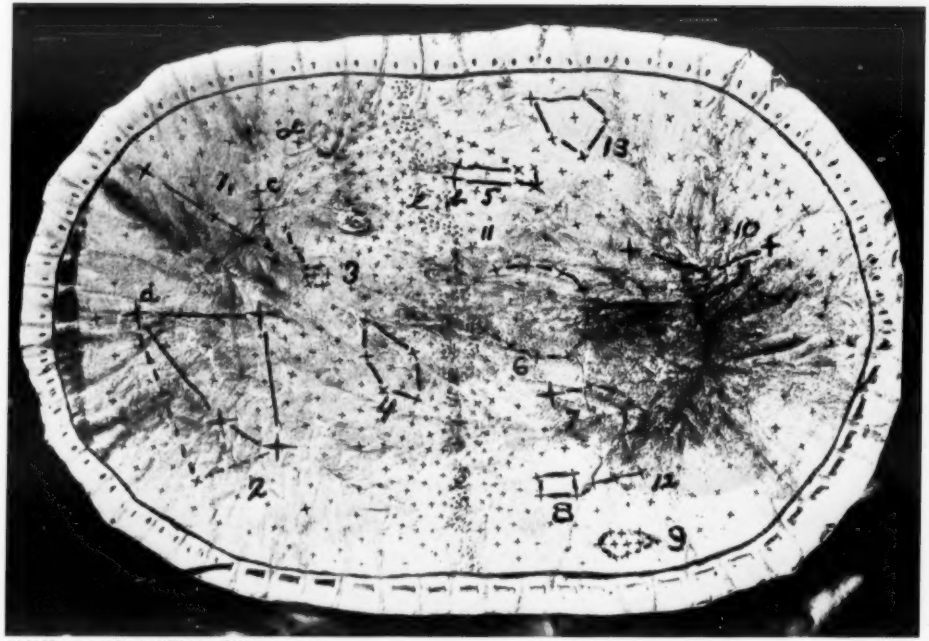
The stars in Figure 5, *a*, *b*, *c*, *d*, *e*, and *f* in the right hand portion of the map are a good representation of the geometric pattern of Lyra formed by Vega, Zeta, Beta, Gamma and Delta of that

[1] In March of 1924 the bright planet Venus passed between the constellations Taurus and the Pleiades, in about the same position as indicated by H. Venus has taken this path many times in the past.



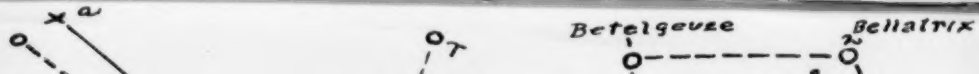
*Field Museum of Natural History, Chicago*

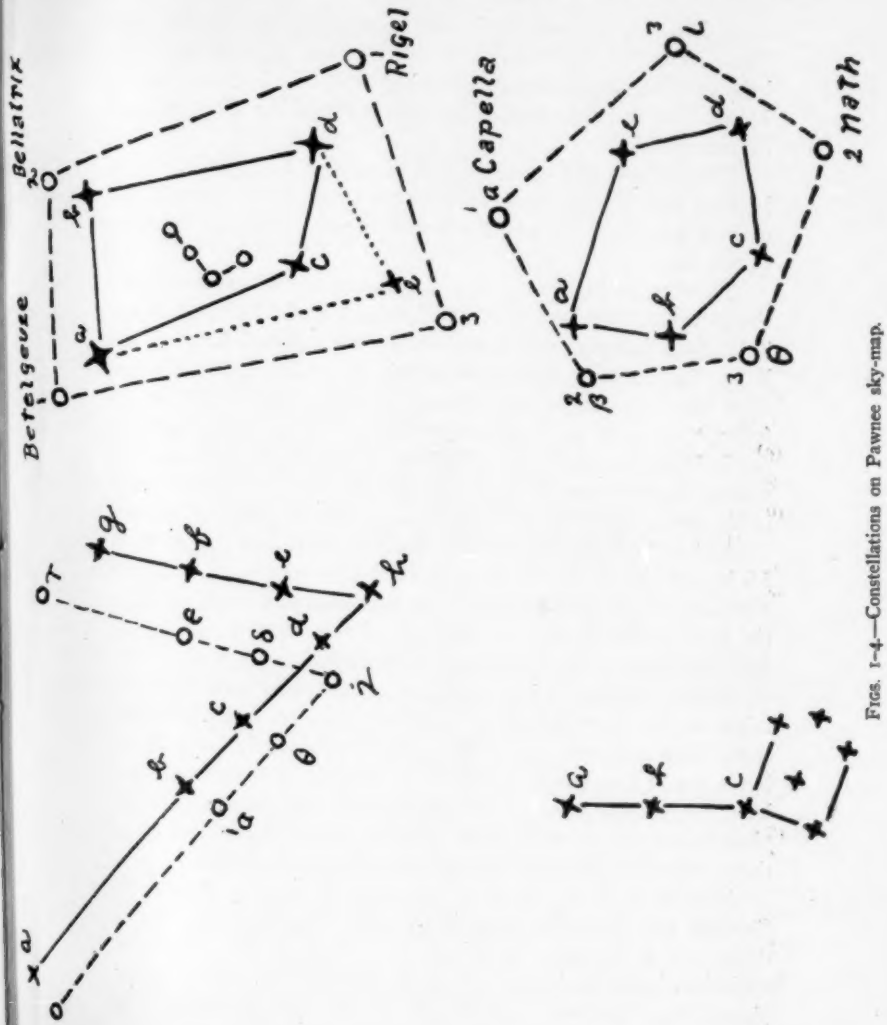
PLATE IV.—Pawnee Sky Map.




*Field Museum of Natural History, Chicago*

PLATE V.—Pawnee Sky Map.






FIGS. 1–4.—Constellations on Pawnee sky-map.

constellation. (*a*) and (*b*) in the figure represent Gamma and Beta, (*c*) and (*d*) Delta and Zeta, (*e*) Epsilon. (*f*) is shown to be brighter than the other stars in that group which is true of Alpha Lyrae. The Indians placed Lyra close to the Milky Way which is its true position.

The likeness of Corona Borealis is shown in Figure 6. The Indians used eleven stars, whereas our maps have seven in the circle formation. The position is not correct. It should be more to the East.

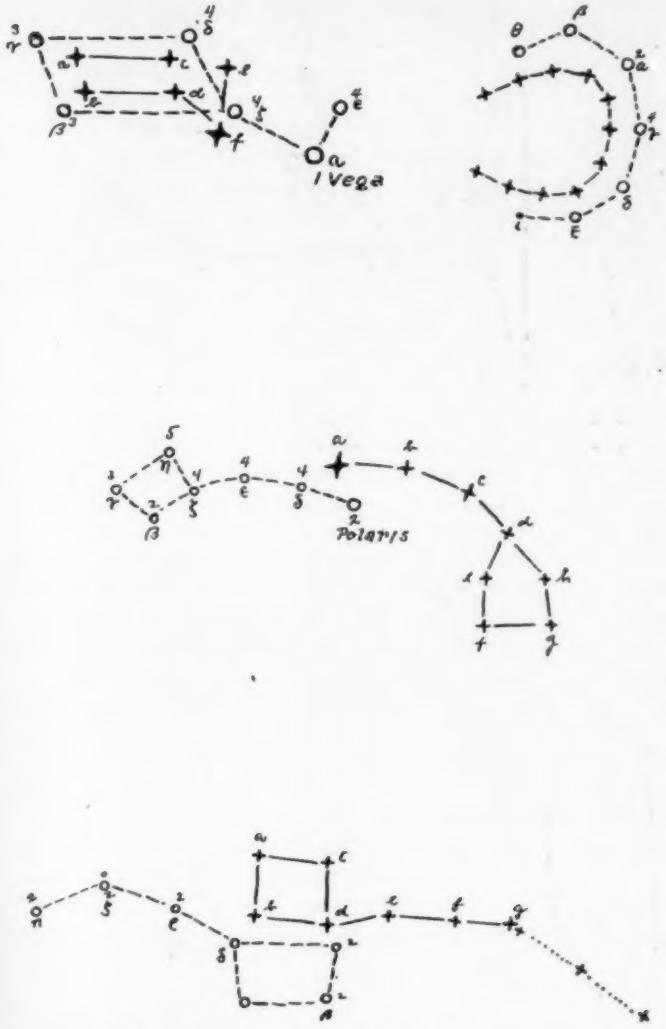
The stars in Figure 7, *a*, *b*, *c*, *d*, *e*, *f*, and *g* look very much like the group forming Ursa Minor, (*a*) being Polaris; Delta, Epsilon, Zeta, Eta, Gamma, and Beta forming the tail and body of the Bear. As they have more stars in this constellation than we see, their identification is not certain, however, they might be as follows: (*f*) and (*g*) Gamma and Beta; (*b*) Delta; (*c*) Epsilon; (*e*) and (*h*) Eta and Zeta. The stars forming the tail show a curved line the same as we see it. The Indians used eight stars in the group and showed them to be about the same brightness.

Alpha, Beta, Gamma, Delta, Epsilon, Zeta, and Eta of Ursa Major are shown in the stars marked *a*, *b*, *c*, *d*, *e*, *f*, and *g* in Figure 8. Alpha and Beta, (*a*) and (*b*), point to Polaris which is the same as we see them. The tails of the bears, however, are reversed when seen in the position as indicated on the map.

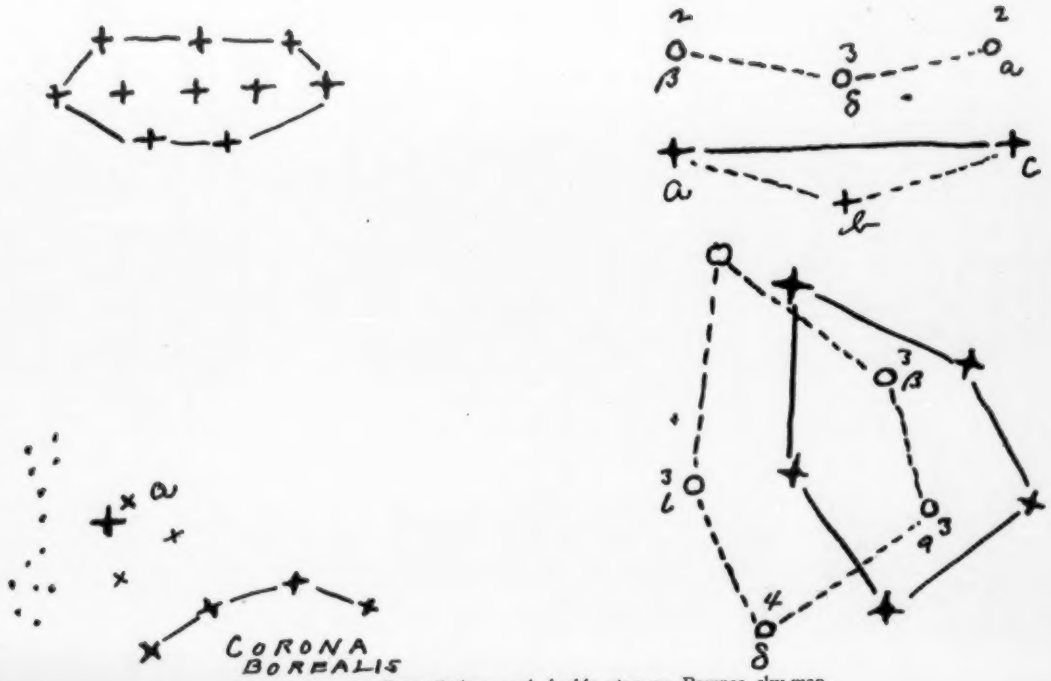
Below Ursa Major is a small group of stars, Figure 9, which might be the constellation Coma Berenices indicated by ten faint stars. This scattered cluster is in about the same relative position in the sky to Ursa Major as the chart shows it. The three groups, Ursa Major, Ursa Minor, and Coma Berenices are quite accurately placed in relation to each other. These stars as we have catalogued them range from fourth to sixth magnitude in brightness.

Andromeda is represented by three stars, see Figure 10, Gamma, Beta, and Alpha. This group of stars might also be the three suns in Cygnus, Epsilon, Gamma, and Delta. The constellation, however, is above Lyra in the heavens. Beta, Alpha (Altair) and Gamma, of Aquila, form a like configuration. The "Eagle" is to the south of Lyra as pictured by the Indians.

At the top of the map, see Figure 13, and in about the same position in the sky in respect to Lyra, is a group of four stars




FIGS. 5–8, 12.—Constellations and double star on Pawnee sky-map.




FIGS. 9–11, 13.—Constellations and double star on Pawnee sky-map.

which resemble Gamma, Beta, Upsilon, and Xi in the head of the Dragon. Taking the five brightest stars in this region, we should find a constellation similar to Cepheus.

The Pawnee Indians have recorded no less than two double stars, the larger and brighter of the pair being drawn prominently and its companion close to it and proportionally smaller. These stars do not resemble the others, so they could not have been placed there to fill in or at random but indicate keen observation. One of these double stars is between Lyra and Corona Boralis near the Milky Way, see Figure 11 on the map. The second, Figure 12, is the tail of Ursa Major, (this constellation[2] is sometimes called the "Big Dipper"), which we know as Miser and Alcor. The position of these twin suns positively identifies this constellation. If we continue the line of the tail downward to include the next bright stars, this would place the double star in the bend of the tail of the bear just as it is in the heavens.

These Indians recognized the constellations as we do, also, the important stars, drawing them according to their magnitude.

The groups were placed with a great deal of thought and care and show long study. They were drawn on the map first, and the stars in the background were put in later as the smaller ones do not show any interference with the constellations. The large groups were foremost in their minds, their relative positions one to the other being quite accurate. The fainter points of light were put in merely to fill the vacant spaces and represent suns of the lesser magnitude.

They recognized the seasonal shift of the stars. This is portrayed by the division of the map.

That they were keen observers, is also shown by the fact that they recorded some double stars. The map being three hundred years old would bar any white influence.

From the facts as we see them regarding the chart, the Pawnee Indians must have had a knowledge of astronomy comparable to that of the early white men.

OSHKOSH PUBLIC MUSEUM,
OSHKOSH, WISCONSIN.

[2] The late Miss Alice C. Fletcher in her paper "Star Cult among the Pawnee a Preliminary Report" (Am. Anthropologist, 730–736, 1902), mentions Ursa Major as being possibly one of the groups used by the Indians.

# SOME NOTES ON DRY ROCK SHELTERS IN WESTERN TEXAS

By VICTOR J. SMITH

SINCE there are no available published data bearing upon dry rock shelter finds in western Texas, these brief preliminary notes are offered for purposes of comparison with similar finds elsewhere and in order to supply those who may be interested with some information concerning the nature of the sites now being investigated in the Big Bend district of Texas.

Climatic conditions in this territory are rather favorable for the preservation of specimens which in many localities would have long ago perished. The district is semi-arid and the rugged topography offers numerous shelters where fragile material has been kept covered and preserved in a bone dry state for many years.

The district directly referred to in this report is a comparatively small one, since all of the shelters which have been investigated to any extent are in the northern part of Brewster County, though reports from ranchmen and other sources indicate that similar material has been found over a considerably wider area, especially to the south.

The mountains in the vicinity investigated range from 4,800 to 6,750 feet above sea level with a rise of from 300 to 2,250 feet above the valleys or surrounding planes. At the foot of many canyon bluffs or at the top of the talus are to be found a number of rock shelters, the most important of which may be roughly classified as follows:

A. Long open shelters, sometimes partly filled with slabs, boulders, and smaller fallen rock;

B. Cave shelters extending back into the cliff. Sometimes these are cluttered with loose rock but are usually floored with fine dry dust, animal refuse, etc., from six inches to six feet deep. The mouth of these caves vary from ten to thirty feet in width and the shelters themselves are from ten to fifty feet in depth.

The shelters which indicate the most use as primitive habitations are, of course, those which afford the best protection from the elements and, in addition, are near mountain streams or water holes which, in spite of the dry nature of the country, are rather permanent at many places. The specimens herein reported were found from surface level to a depth of six feet. In a number of cases crude drawings have been observed on the shelter walls and, in several instances, rock surfaces are grooved and lined in a crisscross fashion with marks varying in size from that of a horse hair to V grooves three-fourths of an inch deep. In other places parts of the rock floor or wall are dead smooth and polished to a high gloss—evidently the result of constant contact with the human body. One such case indicates the position taken by the squaw at the mortar or "pot-hole" as she ground food with the pestle. All of the shelters yield specimens of food grinding implements, most commonly the muller stone and metate and less often the pestle, though many mortars are evident.

The general character of the camp refuse yielded is practically the same throughout the district. Most bulky is the mass of accumulated desert plant material which was used in the preparation of food and drink as well as in the manufacture of basketry, sandals, string, rope, etc. Some of this material is tied loosely in bundles or coils (see Pl. VI, a)—evidently not pottery rests though of similar design. In the practical absence of pottery these bundles were probably methods of storing or bringing in such material or may have been used as basket rests. Other camp materials found are: firewood; ashes; charcoal; cactus hulls; acorn and walnut (Spanish) shells; chewed desert fiber, some of which still shows the imprint of human teeth; human bones; bones of animals, often split for the marrow; rocks used about the camp fire; flint chippings; gourd shells; mesquite beans; acorn cups and shells from the live oaks; bits of twisted or plaited string from one-sixteenth to one-fourth of an inch in diameter (see Plate VII, a); and small corn cobs (see Pl. VII, b). Regardless of depth, the finds run rather uniform, except in the case of one deep excavation here the twisted string found seemed to indicate less skill in its manufacture. Little or none of the true characteristic dry rock

FIG. 1. Typical rock shelter.

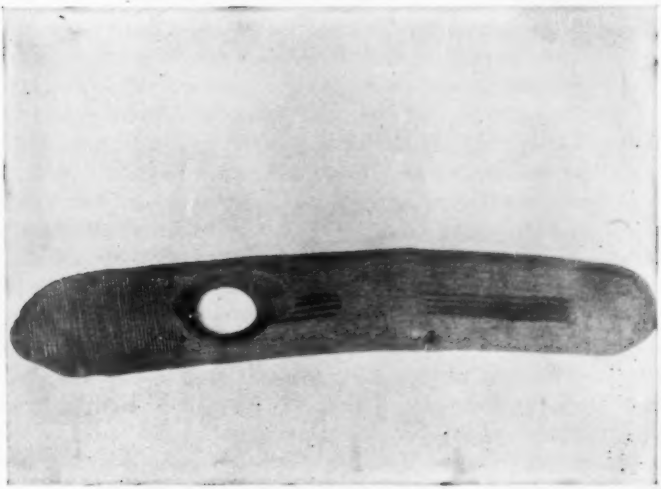


FIG. 2. Wooden knife, shuttle or toggle.
(Photograph taken by courtesy of Mr. Charles Arthur, of Alpine, Texas.)

shelter specimens may be said to be surface specimens. In fact, the first few inches rarely yield anything other than the metate and mano stone, mortar and pestle, or flints. Until this time I have assumed that these surface specimens, since they correspond exactly with many open camp sites, are largely the remains from the Comanche habitation, a relatively short one as compared with the Mescalero Apache, who were driven out as the Comanche were forced westward by the whites.

Without further attempt at interpretation, other than to say that the artifacts found resemble in many respects those of Mesa Verde and Johnson Canyon,[1] the following notes are given concerning the most important of the specimens found:

1. Wooden articles. Pl. VII, b.

a) Fire sticks (see Pl. VII, b), one of which fits snugly into a hole. About ⅜ in. in diameter. Soft punky wood. Hole worn near edge to allow air. Much fine bark and vegetable fiber found which might have been used in the ignition of fires.

b) Wooden knife (see Fig. 2). One only found. Material is exceedingly hard post oak, well seasoned. The whole knife is polished but the hole (one inch at largest point) is very highly polished and runs diagonally as if worn so under constant friction. Possibly this was used as a shuttle. This is ornamented with finely carved parallel lines. The "knife" is one and three-fourths by eleven and one-half inches.

c) Sharpened sticks (see Pl. VII, b). These average about one-fourth to three-eighths inch in diameter and unbroken specimens are a foot or more long.

d) Sticks wrapped about with fiber string. One of these wrapped with bristles of fiber projecting (see Pl. VII, b). This specimen appears to be a small round brush which has been worn down to a stub.

e) Large sticks bent and tied at the top to form a cache for the baskets described below.

2. Sandals (see Pl. VI, b). A number of sandals of tough desert fiber have been found, all more or less damaged. These range in size from an article suitable for a small child to a full-sized man. The figure indicates thongs and loops used to tie these on. The only use of leather observed was in the repair of baskets.

3. Baskets. Only two good specimens have been located (see Figs. 6 and 7) though many imperfect parts of similar weave have been found. These better specimens are of the coiled bowl-shaped type and are without decoration. They measure twenty one inches across the top and stand nine inches high. The several imperfect basket parts suggest articles for carrying

[1] Thirty-third Annual Report of the Bureau of American Ethnology, Smithsonian Institution.

and storing food as well as the possibility of a treated inner surface in order to carry water. Pl. VI, d indicates other types of weaves and edging.

4. String and rope work. Hundreds of short pieces of string have been found. Most of these are three strand spiral twist and measure about one-sixteenth inch or slightly larger in diameter. A number of specimens show the four strand plat or braided strand. Similar pieces, but few in number, run up to as high as one-fourth inch in diameter. Many of these short pieces are knotted, sometimes several pieces being knotted together in such a fashion as to suggest anet of a bout one inch mesh (see Pl. VII, d). Inasmuch as there is no fishing in this district, it is assumed that these may have formed a part of nets used in catching rabbits. Among the bulk of rough plant material is found less carefully made strings loosely knotted, probably used in tying plant material together as it was gathered (see Pl. VI, a).

5. Pottery. Only two distinct pieces of pottery have been located. The better of these, in two pieces, forms a triangular scrap of vessel. The color is light brown with a darker color in the lined design. The thickness averages one-fourth inch. Much more clumsily made is the second piece, a thick walled white cup about three inches in diameter which was found in a cache with the baskets referred to above.

6. Miscelleaneous specimens are bits of shell, beads (about three types) salt (crude, unclean lumps), soft red crayon, flint arrowheads, and scrapers.

Within the limits of these notes no attempt has been made to draw comparisons or to indicate negative finds. It is hoped, however, that the above will prove of some comparative value and that a more detailed report on the field work[2] in this section may follow in a bulletin from the College.

THE SUL ROSS STATE TEACHERS COLLEGE
ALPINE, TEXAS.

[2] Over 100 sites of various natures have been investigated.

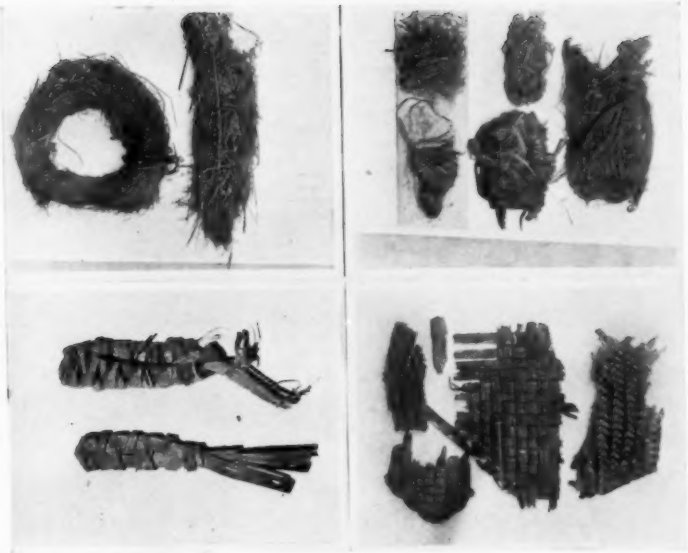


PLATE VI

a, Desert plant materials tied loosely together with yucca string; b, Fiber sandals; c, Basket ears; d, Types of basket and mat weaves and edging.

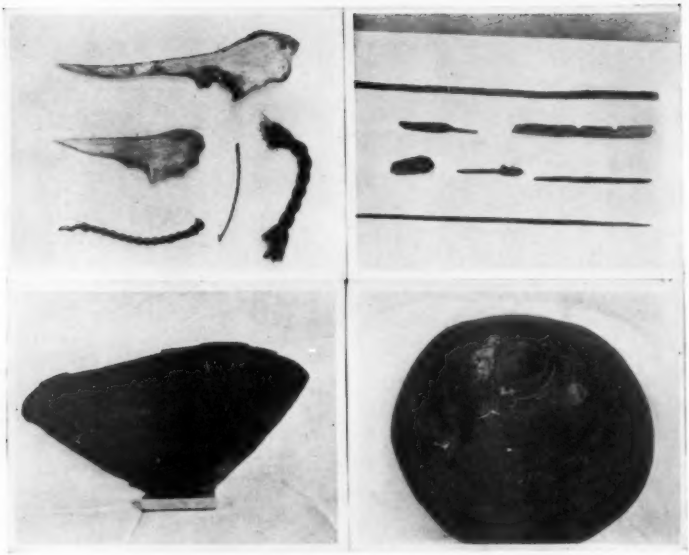


PLATE VII

a, Fiber string and rope; bone piercing instruments; b, Specimens of wooden objects: fire sticks, corn cob, fiber brush, stick with wrapped string, pointed stick; c, Basket from cache containing beads, arrowheads, etc., nine inches high, twenty-one inches wide.; d, Basket showing repairs with leather.

# CONTACTS BETWEEN ARCHAEOLOGICAL AND DENTAL RESEARCH

By HENRY W. GILLETT, D.M.D., F.A.C.D.

IT WAS my good fortune, in the summer of 1925, to spend a few days with Dr. A. V. Kidder at Pecos, New Mexico and later to stay for several weeks at Swart's Ranch, in the Mimbres District, with Mr. and Mrs. C. B. Cosgrove, and to make intimate acquaintance with the very interesting research excavations being conducted at these locations, for Phillips Academy and the Peabody Museum respectively.

Aside from general interest in the fascinating subject of early American archaeology, I found myself developing a deep special interest in a field which seems to have had little or no consideration from those engaged in such excavations. This omission is not at all surprising because archaeologists have not been informed of the tremendous importance of the skeletal tooth and jaw specimens they have recovered, while the dental profession, for which such material opens an avenue of research concerning a vital present day problem, have been entirely unaware of the existence of such material.

I am told that many specimens of teeth and jaws not sufficiently perfect to be of obvious value for the laboratory of Physical Anthropology have been returned to the trenches because of this lack of contact between two equally earnest professions,—the one eagerly searching the meagre records of the past, as left by early races in their homes, their ceremonial rooms and their graves; the other eagerly searching for ways to deliver coming races from the scourge of disease.

At Dr. Kidder's request, I am writing this to inform archaeologists of the reason why such specimens are of value in dental research, and how they may proceed in order to make them available.

The dental profession is making great efforts to elucidate more fully the etiologic causes for dental caries, for the disease

commonly known as pyorrhea, for the irregular position in which childrens' teeth often develop, known technically as malocclusion, and for various other ailments and abnormalities of teeth and jaw.

It is self-evident that food supply and food habits must be important factors in tooth development, and that the absence from the food of the elements necessary for the development of good teeth, must have deleterious results. Dentists also feel that vigorous use of the teeth and jaws in masticating food, has a profound effect in influencing the development of strong disease—resisting masticating organs, and that this is especially true concerning the membranes, ligaments and vascular tissues surrounding and supporting the teeth, which are the seat of pyorhea and allied diseases.

To demonstrate the values of different foods so as to permit authoritative conclusions, we must fall back upon research with such animals as rats because of the impossibility of controlling the food of human beings with sufficient accuracy, and even if this were possible, generations would be required to reach conclusions. In this research, biologists are making considerable progress, but in the specimens and data that can be collected in the Southwest and in Mexico, we have a record of what has happened in the way of tooth development and disease progress in human beings in past centuries, and it seems likely that diet can be well correlated to the specimens.

Therefore, it follows that a comprehensive collection of jaws and teeth from different sections together with data concerning food supply and food preparation, arranged so as to permit comparative study, would be a most valuable source of information concerning the influence of food supply, and the influence of either vigorous use or habitual disuse of the masticatory function.

The theory concerning the beneficial effect of active use of the teeth and jaws on their development is well established in the mind of the dentist, but to enforce it on the mind of the student and the public, and to correlate the interrelations of a diet low in tooth-building material, but making heavy demand on the masticating function and consequently insuring active capillary blood supply to all the parts involved, or one high in tooth-building elements but of low masticatory requirement, or the

different interrelations of these factors, a well arranged collection of prehistoric jaws will prove most valuable.

Such inspection as I was able to make of specimens collected in 1925 at Pecos and at Swart's Ranch, was most interesting in preliminary information. It revealed that at Pecos every pathological condition the modern dentist has to treat was common in this prehistoric period immediately under consideration. This was contradictory to the opinion dentists have long held that primitive races were comparatively free from some of our modern diseases because of dietetic and functional factors, but it is not surprising if we assume a mushy, soft diet and low calcium and phosphorus content.

The surprising thing was to find at Swart's Ranch the same condition except that malocclusion was practically absent in the specimens available there, in view of the fact that the diet is presumed to have been nearly the same.

This is cited merely as an example of the problems for the solution of which dental research organizations need a collection of specimens from many locations with correlated data as to food supply.

The Dental School of Columbia University is prepared to house and arrange such specimens and to offer opportunity for research to those interested. It will also gladly act as a clearing house for distribution of duplicate specimens to other schools and research associations who can use them to advantage.

After removal from the soil, such specimens rapidly disintegrate when left exposed to atmospheric influence without protection. At Pecos actual test showed that unprotected tooth enamel began to crackle from desiccation within two hours after excavation, and bone is frequently so friable that it cannot be removed from the soil until it is protected and stiffened. Teeth left exposed to the Southwestern atmosphere quickly lose so much of their enamel as to be valueless for research.

Thus far paraffin is the best medium found for protecting all such specimens.

For dental research and museum purposes the following routine is desirable:

1. Collect from each archaeological location specimens of

(1) complete skulls,
(2) complete jaws with the teeth in place,
(3) parts of jaws with the teeth in place,
(4) loose teeth (where feasible, keep the teeth of each skull separately).

2. Keep each specimen separately, with the number given the specimen in the archaeological records, so reference can be had to its data later, if desired. If dates ever become possible for such specimens, it will greatly add to their dental research value.

3. Paper bags of suitable sizes on which may be entered the data for each specimen, serve well for field purposes.

4. The best plan yet suggested for protection of specimens is the following, which is easy to carry out in the field, affords adequate protection from the disintegrating effect of varying degrees of humidity, and introduces no difficulties for a museum staff in its subsequent handling of the material.

5. The requirements are:

(1) A supply of paraffin (the ordinary "Parawax" supplied by grocers and general stores for household use is excellent).
(2) A clean pail or kettle in which to melt the paraffin, large enough to contain the specimens, sometimes a supplementary can or pail of small size is desirable for the small specimens. In the lower altitudes an improvised water bath comprising the kettle or pail for the paraffin, and a larger one for containing water into which the other can be set, is helpful in avoiding overheating of the paraffin.
(3) Some wire gauze or mosquito netting, a small can with wire bail and perforated bottom, to facilitate dipping and easy removal of small specimens from the paraffin.

The paraffin should be used at a temperature not much above its melting point. If the specimens are placed in over-hot paraffin, it results in a considerable amount of bubbling, due to the rapid replacement of the air contained in the specimen by the hot paraffin. This quickly expanding and escaping air causes a condition simulating boiling, which exercises a disintegrating effect upon the specimens. In the higher altitudes the water bath does not work well because of its lower boiling point, and it is not necessary if adequate care is taken to avoid overheating of the paraffin.

Specimens should be dipped in the melted paraffin long enough

for them to take on approximately the temperature of the paraffin itself, which is indicated by the disappearance of the layer of partially hardened paraffin that will collect on the surface of most specimens when transferred from the cooler atmosphere to the paraffin.

In the case of fragile specimens, for which a layer of paraffin on the surface may be desirable as a protection against mechanical disintegration while in transit, it is frequently desirable to remove the specimens before the congealed layer on the surface shall have disappeared. In case it is desirable to add still more paraffin as a mechanical protection, this may easily be done by dripping it from any convenient applicator such as a stick, a bit of rag or absorbent cotton previously dipped in the melted paraffin. When this is to be done, the specimen should first be laid upon a piece of loose paper so there will not be risk of breakage of the specimen in prying it loose from the underlying board or bench top when the wax has hardened. This same process of dripping the melted wax onto a bone too fragile for removal without mechanical protection, or in some cases, the pouring of it from a tin cup supplied with a spout, is frequently helpful in protecting such specimens. The removal of surplus paraffin and any paper that may be incidentally attached in the process above described, is easily accomplished at the bench of the museum laboratory without damage to the specimen.

It is earnestly requested that all such specimens as above enumerated, be protected as described, packed in such a manner as adequately to protect them from damage in transit, and be forwarded by express, to

The Museum,
Dental School of Columbia University,
302 East 35th Street,
New York City,

accompanied by available data when possible, and always by statement of location from which they come, the name and address of the contributor. Express charges will be gladly paid and the specimens will be adequately cared for.

140 West 57th Street,
New York City

# A NEW TYPE OF STONE KNIFE

By WALTER HOUGH

FOR several years data have been gathered concerning an unusual implement of chipped flint which in all probability is a knife. It is practically in the form of the flint knife, frequently called a spear head, but instead of being nocked equally on both corners of the base, is nocked for hafting on one corner, opposite the edge designed for cutting. The first specimen, of dark gray chert, coming to notice was brought by Mrs. Matilda Coxe Stevenson years ago from Taos, New Mexico, where it had evidently been used by the Pueblos as a fetish, in accord with their custom in regard to ancient stone implements. (Fig. 1, a). Several of these knives were found in a cave near Las Cruces, New Mexico, on the information of Dr. Nathan Boyd. These were of black obsidian. A third locality is in Texas, and two specimens of flint from the site are in the collection of Mr. Victor J. Evans of Washington, D. C. They were found in a mass of flint implements and chips dredged from a lake at San Marcos, Hays Co., Texas, in the southeastern part of the state (Fig. 1, c). Another specimen, from the eastern part of Travis Co., Texas, was secured by Prof. J. E. Pearce, of the University of Texas (Fig. 1, b). Another locality where several specimens have been found is Terry, Montana on the information of C. A. Kinsey, who sent a photograph of a specimen, the material of which is translucent stone, carefully worked (Fig. 1, d). On these data it appears that there is sufficient authority to regard this knife as a new type of flint implement and hitherto undescribed. It is much desired to call this form to the attention of museums and collectors in the hope of extending the range of this rare type of the flint knife.

Several knife-like specimens from the cliff-dwellings, made of the same material as the spatulate implements, are suggestive of the use of a diagonal cutting edge. The first of these has finger-grips formed in the handle and is evidently a very rare specimen (Fig. 1 ,f). The second is rounded and simpler and shows the diag-

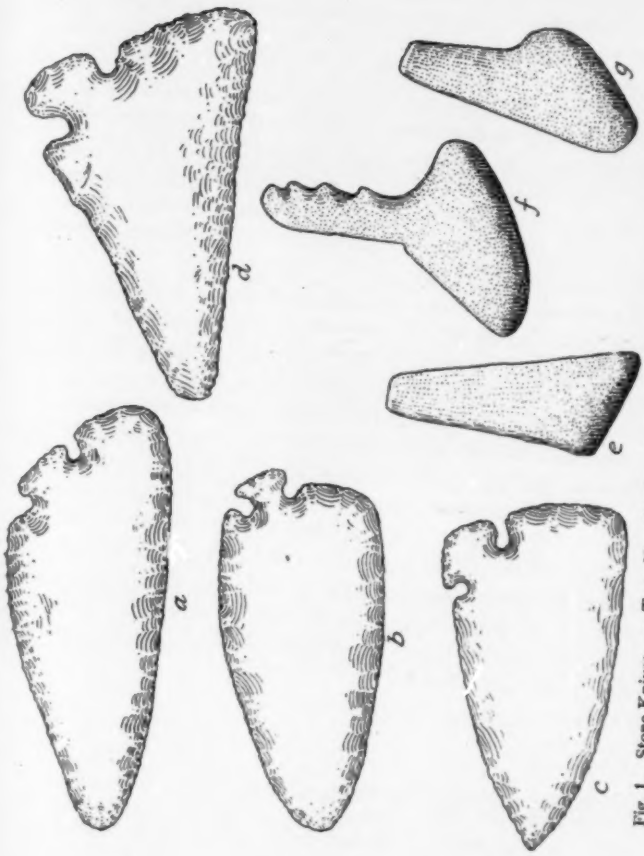



Fig. 1. Stone Knives. *a*, Toas, New Mexico; *b*, eastern Texas; *c*, southeastern Texas; *d*, Terry, Montana; *e–g*, cliff-dwellings.

onal edge (Fig. 1, e). The third is cut likewise with a diagonal edge (Fig. 1, g). They show the use of a knife-like tool for a motion combining pressure, scraping, cutting, and sawing, as shown in the stub ends of cuts made in bisecting saplings found by the writer in the Tularosa cave.

I consulted Professor Holmes on the hafting of this knife and he pointed out that the size of the nocks would indicate in case of wrapping on, as the arrow, a shaft or joining of rather small diameter, and that a larger hand portion would be difficult to wrap. The method of hafting, if rigid at all, is not apparent as yet. It may be that the nocks are for a thong by which the knife was carried, as in an iron leather-worker's knife collected by the writer in Mexico and mentioned in another place.

Moorehead illustrates a stone from Harakey or Quivera, New Mexico, collected by Mr. Brower, which is suggestive of the form under discussion.[1] The specimen may be a square base knife which has been broken and reworked. It is, however, in the area where most of the type occur. The Stockton curve implements also described by Moorehead[2] are more remotely suggestive and relate with the knife under consideration to Eskimo forms.

Common implements which have been used continuously by man are likely to show traces of their ancient origin or relate to a plane of culture. It has been pointed out by European archaeologists that there are many such survivals in use to this day where handicrafts are preserved. It is of interest, therefore, to collect the ordinary tools of crafts on account of their interlocking with ethnology and archaeology.

U. S. NATIONAL MUSEUM,
WASHINGTON, D. C.

[1] Moorehead. Prehistoric Implements. 1900. P. 83.
[2] Moorehead. id., p. 262.

## SOME NEW PUBLICATIONS

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Friederici, Dr. Die Heimat der Kokospalme und die vorkolumbische Entdeckung Amerikas durch die Malaio-Polynesier. (Sonderdruck aus dem Erdball, 1. Jahrg, Heft 2: 71–77. (Berlin, 1926.)

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# ANTHROPOLOGY AT THE PHILADELPHIA MEETING AND PROCEEDINGS OF THE AMERICAN ANTHROPOLOGICAL ASSOCIATION

The American Anthropological Association held its twenty-fifth annual meeting in Houston Hall, University of Pennsylvania, Philadelphia, Pennsylvania, on December 28, 29, and 30, 1926, in conjunction with Section H, American Association for the Advancement of Science, and the American Folk-Lore Society.

Two meetings of the Council were held, with President Hrdlíčka in the chair.

COUNCIL MEETING, DEC. 28, 9:15 A.M.

The following reports were read and accepted:

REPORT OF THE SECRETARY

The proceedings of the last annual meeting of the Association were published in the AMERICAN ANTHROPOLOGIST for January-March, 1926. There has been no special meeting of the Association, of the Council, or of the Executive Committee during the year.

The Anthropological membership in the National Research Council is as follows:

Elected by the Association: to serve until July 1, 1927—A. Hrdlíčka, A. V. Kidder; until July 1, 1928,—N. M. Judd, Herbert J. Spinden; until July 1, 1929,—Robert H. Lowie, Nels C. Nelson.

Members at large (elected by the Division), to serve until July 1, 1927,—R. J. Terry; until July 1, 1928,—George Grant MacCurdy; until July 1, 1929,—Berthold Laufer.

The Anthropological membership in the Social Science Research Council is as follows:

To serve until April 1, 1927,—Fay-Cooper Cole; until April 1, 1928,—John R. Swanton; until April 1, 1929,—R. B. Dixon.

The Association has lost four members by death during the year: Herman Blatz, Professor Edward S. Morse, John Murdock, Dr. Saxton T. Pope. Seventeen members have resigned, four have died, twenty-one have been dropped, and one hundred and three new members have been added, making a net gain of sixty-one.

The membership is as follows:

| | |
|---|---|
| Honorary members | 3 |
| Life members | 13 |
| Regular members | 714 |
| | 730 |

The undersigned, having now served five years as Secretary, begs to tender his resignation. The duties of the office are not onerous, and result in most pleasant contacts with a wide circle of co-workers. It does not seem desirable, however, that tenure of the Secretaryship by any one individual should be unduly prolonged.

Respectfully submitted,
A. V. KIDDER, *Secretary*

## REPORT OF THE TREASURER

### *Receipts*

| | | | |
|---|---|---|---|
| Balance on hand December 17, 1925 | | | $1733.82 |
| American Ethnological Society | | $ 815.00 | |
| Anthropological Society of Washington | | 169.90 | |
| Central States Branch | | 213.50 | |
| Annual membership dues of A.A.A. | | | |
| 1924 | $ 42.00 | | |
| 1925 | 120.40 | | |
| 1926 | 2527.24 | | |
| 1927 | 289.16 | | |
| 1928 | 6.00 | 2984.80 | |
| Sale of Publications | | 264.58 | |
| Reimbursements | | 1144.87 | |
| Interest | | 17.75 | |
| Miscellaneous | | 58.53 | 5668.93 |
| | | | $7402.75 |

### *Disbursements*

| | | | |
|---|---|---|---|
| Geo. Banta Publishing Co.: | | | |
| Printing | $2825.10 | | |
| Postage | 115.77 | | |
| Storage | 70.00 | 3010.87 | |
| Editor's expenses | | 546.75 | |
| Treasurer's expenses | | 679.23 | |
| Secretary's expenses | | 89.86 | |
| Reprints | | 269.68 | |
| Memoirs | | 723.24 | |
| Purchase back numbers | | 40.50 | 5360.13 |
| Cash on hand, December 8, 1926 | | | 2042.62 |
| | | | $7402.75 |

*Resources*

| | | | |
|---|---|---|---|
| Cash on hand December 8, 1926 | | | $2042.62 |
| Due from sales: | | | |
| 1925 | $1.25 | | |
| 1926 | 231.68 | $232.93 | |
| Due from dues: | | | |
| 1924 | $12.00 | | |
| 1925 | 108.00 | | |
| 1926 | 523.00 | 643.00 | 875.93 |
| | | | $2918.55 |

*Liabilities*

| | | |
|---|---|---|
| Membership dues for 1927 and 1928 already paid | $295.16 | |
| Net excess resources over liabilities | 2623.39 | |
| | | $2918.55 |

*Cost of Publications*

| | | | |
|---|---|---|---|
| AMERICAN ANTHROPOLOGIST, vol. 27, no. 4 | | | |
| Printing | Paid in 1925 | | |
| Distribution | $5.70 | | |
| Storage | 10.00 | | |
| Reprints | 48.73 | | $64.43 |
| AMERICAN ANTHROPOLOGIST, vol. 28, no. 1 | | | |
| Printing | 1324.98 | | |
| Reprints | 90.04 | | |
| Distribution | 45.82 | $1460.84 | |
| Reimbursements | | 404.72 | 1056.12 |
| AMERICAN ANTHROPOLOGIST, vol. 28, no. 2 | | | |
| Printing | $495.93 | | |
| Reprints | 42.16 | | |
| Distribution | 23.75 | | 561.84 |
| AMERICAN ANTHROPOLOGIST, vol. 28, no. 3 | | | |
| Printing | 479.97 | | |
| Reprints | 60.31 | | |
| Distribution | 7.11 | 547.39 | |
| | | 12.70 | 534.69 |
| AMERICAN ANTHROPOLOGIST, vol. 28, no. 4 | | | |
| Printing | $524.22 | | |

| | | | |
|---|---|---|---|
| Reprints | 28.44 | | |
| Distribution | 21.24 | 573.90 | |
| Reimbursements | | 4.21 | 569.69 |
| Memoir, Number 32 | | | |
| Printing | $723.24 | | |
| Reimbursement | 723.24 | | |
| Net cost | | | $2786.77 |
| Postage for undelivered copies returned in 1926 | | | 1.65 |
| Postage for publications sold to foreign customers | | | 10.50 |
| Total cost | | | $2798.92 |

PERMANENT FUND

*Receipts*

| | | | |
|---|---|---|---|
| Balance Dec. 17, 1925 | | | $1632.08 |
| Interest on Liberty Bonds (3), April 9 | $ 6.36 | | |
| Interest on Liberty Bonds (1), May 13 | 2.13 | | |
| Interest on savings account, July 1 | 19.73 | | |
| Interest on Liberty Bonds (3), Oct. 9 | 6.39 | | |
| Interest on Liberty Bonds (1), Nov. 13 | 2.12 | | 36.73 |
| Total | | | 1668.81 |

*Investments*

| | | |
|---|---|---|
| Liberty Bonds | $388.12 | |
| Treasury Saving Certificates | 60.00 | 448.12 |
| Cash in savings account | | 1220.69 |
| | | $1668.81 |

The Association closes the year with all bills paid and about $2000 on hand. In order to put the Association on a sounder financial basis the Treasurer would suggest the following measures of economy:

(1) To reduce the number of free separates allowed each author to 25. The present allowance is 50. This reduction would represent a saving of about $135 per annum and would work no hardship upon the average author. There is ample precedent among other journals for the supplying of only twenty-five free separates to authors.

(2) Increase the charge for the Association's publications to $6.00 per annum in the case of the thirty-three German libraries now receiving the Association's publications at $1.00 per year. The

actual cost of producing and delivering the ANTHROPOLOGIST to these libraries was about $112 during 1926.

The present financial status of the Association warrants the addition of a thousand dollars ($1000) to the Association's permanent fund. This would leave a thousand dollars in hand to begin the new year, which, coupled with the income for 1927 should be ample for operating expenses. On the basis of operations for 1926 the publication of the AMERICAN ANTHROPOLOGIST for 1927 will require about $2800. The salary of the editor's assistant will total $540, the salary of the treasurer's assistant, if increased to $35 per month, as advocated elsewhere, would total $420, and the joint expenses of the editor's, treasurer's, and secretary's offices, apart from salaries, will be about $500. This makes a total operating expense of something over $4200. The income from members' dues, from sale of publications, and from interest for 1927 should total at least $4800.

In closing I should like to concur with the Editor in his suggestion as seeking outside support for the publication of the Memoirs. A subsidy, such as that bestowed by the Maori Research Board upon the Journal of the Polynesian Society, would be highly desirable and would permit the publication of valuable papers too lengthy for the AMERICAN ANTHROPOLOGIST.

The Association closes the year 1926 better off financially by $300 than at the close of 1925.

Respectfully submitted,

E. W. GIFFORD, *Treasurer*

The accounts of the Treasurer, E. W. Gifford, have been examined and found correct.

(Signed) R. H. LOWIE,
A. L. KROEBER,
*Auditing Committee*

## REPORT OF THE EDITOR

During 1926, thanks mainly to Mr. Gifford's efforts, the AMERICAN ANTHROPOLOGIST appeared approximately on schedule time, the October-December issue being distributed early in November. It has not been possible to give equal attention to the expeditious printing of the two memoirs, received a year ago. One of them, however, Dr. Elsie Clews Parsons' "A Pueblo Indian Journal, 1920–1921" (Memoir 32), has appeared, while Mrs. E. S. Goldfrank's paper

on "The Social and Ceremonial Organization of Cochiti" is being paged at the time of writing.[1]

The Editor regrets to report that, owing to an abundance of contributions little to be expected when he took office two years ago, many papers have been unduly delayed in publication. There is no immediate remedy in sight unless additional funds be secured from outside sources. Papers, often valuable ones, continue to pour in, and naturally the Editor does not like to discourage their presentation. Three considerations play a part in deciding what is to be used in a particular issue,—priority, news value, and length. The Editor strongly urges the Council to advise him (a) as to the desirability of applying for substantial annual grants to outside agencies, (b) as to supplementary or alternative means of coping with the situation. The greatest desideratum is undoubtedly the re-establishment of a regularly appearing Memoirs series to take care of long articles. The Editor was committed to the publication of several such during the last year, but seriously questions the propriety of continuing to run them under present conditions unless, as happened in one case, at the author's expense. Long papers should certainly be issued by the Association, but in appropriate memoir form.

The Editor's difficulties all go back to a single ultimate source,—inadequate funds. It is impossible for the Editors to devote more than a limited portion of their time to the publications of the Association. The Editor has one half-time assistant who is generally a graduate student. Obviously the salary is insufficient to keep any one incumbent permanently nor can one reasonably expect to get one who combines knowledge of anthropology with that of typing and proofreading at $45 a month. Moreover, students have other duties and interests which from personal and professional points of view may be more important than routine office work. The Editor earnestly requests the members to take these circumstances into account and to pardon delays in the acknowledgment of letters or articles, the preparation of contributions, omissions in the list of new publications, the forwarding of separates, etc. Each of these jobs requires time. As soon as the Association is ready to equip an editorial office on the *Saturday Evening Post* pattern, the service rendered will be made correspondingly more efficient. In the meantime the Editor penitently, but not too penitently, admits shortcomings in

[1] It has since been issued.

the management of routine business and inquires whether, since the Association is unable to pay for a second half-time assistant, the members will take active measures to secure support for such additional aid from outside sources.

The Editor has no illusions as to the excellence of the ANTHROPOLOGIST. He does not consider it on a par with *L'Anthropologie*, the *Zeitschrift für Ethnologie*, and *Anthropos*. So long as some of the most eminent members rarely or never contribute even reviews, the quality of the journal cannot come up to the highest standard achievable. From the Editor's point of view, two kinds of articles are most welcome,—authoritative summaries of real contributions to knowledge, whether due to the writer or others, and brief discussions of theory. There are several such in the editorial drawers, but far too few.

A great desideratum would be the renewal of the annotated bibliography of Periodical Literature, which in former years was the peculiar service rendered to the Association by the late Professor Chamberlain. This would again require additional funds and cooperative effort on the part of the membership, but would be one of the greatest improvements in the magazine conceivable. A glance at Dr. Hrdlička's *Journal of Physical Anthropology* or Prof. Boule's *L'Anthropologie* indicates the advisability of resuming this section of the ANTHROPOLOGIST. However, it is a question whether the need of such summaries will be met by the new *Ethnologischer Anzeiger*. Duplication of effort is unprofitable; on the other hand, it remains to be seen how competently the *Anzeiger* will serve Americanist interest and to what extent it is likely to be accessible to our membership.

Respectfully submitted,
ROBERT H. LOWIE, *Editor*

It was moved and passed:

That the recommendation of the Treasurer that free separates to authors be reduced from fifty to twenty-five in number, be referred to the Committee on Publication with power to act.

That the matter of increasing the price of the AMERICAN ANTHROPOLOGIST to certain German libraries be referred to the Editor and Treasurer with power to act.

That the Treasurer be instructed to submit at the next annual meeting a list of the securities in the Permanent Fund.

That the Treasurer be authorized to increase the salary of a part-time assistant from $25.00 to $35.00 per month.

That the question of reinaugurating a section in the ANTHROPOLOGIST devoted to abstracts of periodical literature be referred to the Committee on Publication.

There were presented and accepted reports from the Committee on Relations between the Association and the National Research Council, the International Institute of African Languages and Cultures, and the Chairman of the Encyclopedia of the Social Sciences.

The following Committees were appointed:

*On resolutions:* A. V. Kidder, F. C. Cole, E. A. Hooton

*On audits:* R. H. Lowie, A. L. Kroeber.

COUNCIL MEETING, DEC. 28, 5:30 P.M.

113 new members were elected; their names have been incorporated in the list on p. 159 ff. January-March issue.

It was moved and passed:

That the present committees of Finance, Publication and Program be continued.

That the next annual meeting be held at Andover, Massachusetts.

That the Committee on Program be instructed to arrange the program for the Andover meeting in such a way as to realize the wish of the Council that this meeting be devoted largely to symposia and discussions of Policy.

That the Council approves the project for the preparation by the Division of Anthropology and Psychology of the National Research Council of an index of the AMERICAN ANTHROPOLOGIST.

That the Secretary be instructed to send telegrams conveying the greetings of the Association to Francis La Flesche, M. H. Saville and W. H. Holmes.

That a Committee be appointed to consider the possibility of holding summer meetings of the Association.

The Chairman appointed the following Committee on Summer Meetings: R. H. Lowie, Chairman, A. V. Kidder, F. C. Cole, H. C. Shetrone, A. Hrdlička.

ANNUAL MEETING, DEC. 29, 9:15 A.M.

The following list of officers for 1927 was presented by the Nominating Committee (appointed in advance of the meeting, and

consisting of Walter Hough, Chairman, J. A. Mason and R. J. Terry), was accepted by the Association, and the individuals were declared elected by a vote cast by the Secretary.

*President:* Marshall H. Saville.

*Vice-President* (1930): Fay-Cooper Cole.

*Secretary:* A. I. Hallowell.

*Treasurer:* E. W. Gifford.

*Editor:* R. H. Lowie.

*Associate Editors:* E. W. Gifford, F. G. Speck.

*Executive Committee:* A. Hrdlička, A. M. Tozzer, E. Sapir.

*Council* G. Engerrand, W. Gates, P. E. Goddard, S. J. Guernsey, C. E. Guthe, H. U. Hall, E. S. Handy, C. L. Hay, J. P. Harrington, M. R. Harrington, L. W. Jenkins, A. V. Kidder, T. Michelson, W. F. Ogburn, B. F. Schappelle, J. B. Stetson, A. M. Tozzer, S. Trotter, E. P. Wilkins, W. Bradfield, E. H. Morris, T. W. Todd, F. H. H. Roberts, Jr., J. W. Cooper, W. K. Gregory, H. C. Shetrone (1930).[2]

*Representatives from the Association to the National Research Council to serve for three years from July 1, 1927:* F. Boas, F. W. Hodge

*Representative from the Association to the Social Science Research Council to serve for three years from April 1, 1927:* Fay-Cooper Cole.

*Delegates from the Association to Section H, A.A.A.S.:* Truman Michelson, C. E. Guthe.

The Secretary was instructed to transmit resolutions of thanks to the University of Pennsylvania, to the members of the local committee and to Colonel Muckle.

On Wednesday evening, Dec. 29, the Association held its annual dinner by invitation of Colonel John S. Muckle, at his home, Craig Hall, Haverford, Pa. Following the dinner Dr. Hrdlička delivered the Presidential Address: "An Anthropological Survey in Alaska."

At the general sessions the following papers were presented or read by title:

Waldemar Jochelson, The Palaeolithic and Neolithic Periods and the Transition of the Stone Age to the Age of Metal in Siberia.

Carl E. Guthe, A Method of Ceramic Description.

Aleš Hrdlička, The Most Recent "Ancient" and Other Men in America.

Herbert Williams Krieger, Archaeology of the Upper Columbia River Valley.

[2] The complete list of Council members, including those previously elected, will be found on p. 158 (January–March issue).

T. R. Garth, The Will-Temperament of Full-Blood Indians.
Charles B. Davenport, Measurement of Men.
R. Bennett Bean, Stature in Some Old Americans of Virginia.
Raymond Pearl, Differential Fertility in the United States.
Truman Michelson, Notes on Physical Anthropology of the Eskimo of St. Lawrence Island.
M. J. Herskovitz, An Analysis of the Physical Form of Various Population Groups within the American Negro Population.
Mildred Trotter, A Report on Some Ancient Egyptian Vertebral Columns.
Bruno Oetteking, The Cranio-Vertebral Border Region.
William L. Straus, Jr., The Relation of the Lower Extremity to the Vertebral Column.
George D. Williams, Demonstration of a New Cephalometer.
T. Wingate Todd, Skeletal Mortality Records.
C. J. Connolly, The Relation of the Orbital Plane to the Position of the Teeth.
Martin Luther, Some Preliminary Remarks on the Study of Finns and Lapps.
Isabel Gordon Carter, Further Proof of Changes in Bodily Form of American-Born Children.
Horace Gray, Increase in Stature of American Boys in the Last Fifty Years.
John M. Cooper, The Waswanipi.
Pliny E. Goddard, The Relationship Between Navajo and Apache.
A. Irving Hallowell, Recent Changes in the Kinship Terminology of the St. Francis Abanaki.
G. G. MacCurdy, The American School of Prehistoric Research in 1926.
Robert H. Lowie, The Origin of the State in Primitive Societies.
Walter Hough, Dolls and Anthropomorphic Images.
Margaret Mead, Etiquette and Taboo in Samoa.
Gladys Tantaquidgeon, Notes on Mohegan Folk-Lore.
Joseph McGoldrick, The Phallic Sheath Among the Parentintin Indians of South America.
Herbert J. Spinden, Maya Remains on the East Coast of Yucatan.
Harold S. Colton, A Survey of the Prehistoric Ruins West of the Little Colorado in Arizona.
Frances Dorrance, Report on Archaeological Survey of Eastern Pennsylvania.
John R. Swanton, Ceremonies and Ceremonial Grounds of the Creek Indians.
W. C. MacLeod, Seventeenth Century Economy and Finance as Determinants in the Fate of the North American Indians.
J. Frank Dobie, Legendary Riders of the Southwest.
Nathaniel Cantor, Rank in New Guinea.
R. S. Scammon, The Relationships Between the Duration of Prenatal Life, Childhood and Maturity in Man and Mammals.
Adolph H. Schultz, Observations on a Gorilla "Fetus."
Dudley J. Morton, Human Origin.
William K. Gregory, The Palaemorphology of the Human Head, Ten Structural Stages from Fish to Man.
Henry Field, Oxford University Expedition at Kish, Mesopotamia, Season 1925-26.
Neil M. Judd, The Evolution of Pueblo Bonito.
F. H. H. Roberts, Certain Small House Sites in the Chaco Canyon, N. M.

W. K. Moorehead, The Etowah Culture Compared with that of Ohio and Illinois.
Frans Blom, Maya Work of Tulane University.
Oliver Ricketson, Jr., Three Maya Astronomic Observatories.
John E. Teeple, Maya Inscriptions: Stela C at Copan.
George O. Jager, The "Great Cycle" Glyph.
Mary L. Kissell, A Unique Salish Weaving Center.
H. U. Williams, Gross and Microscopic Study of a Peruvian Mummy.
D. S. Davidson, The Problem of the Family Hunting Territory Complex among the World's Marginal Peoples.
F. G. Speck, Iroquois and Wabenaki Culture Relationships.
Frederick Johnson, Note on Showshoes of Eastern Massachusetts.
Melville Jacobs, The Genetic Relationship of Sahaptin and Lutuamiam.

There was also held a symposium on Oceanic and American languages, participated in by Drs. Michelson, Swanton, Dixon, Cole and Goddard.

A. V. KIDDER
*Secretary.*

# ARCHAEOLOGICAL FIELD WORK IN NORTH AMERICA DURING 1926

The Committee on State Archaeological Surveys of the Division of Anthropology and Psychology of the National Research Council collects each year summaries of archaeological field work conducted by state agencies. To the present report there is also added a résumé of investigations by such museums and other institutions as have cooperated with the Committee by keeping it in touch with their work. The Committee is desirous of making this annual summary as complete as possible; it would therefore be very glad to receive information as to any archaeological work in progress or in contemplation by any organization or individual not here included.

The Committee was set up by the Division for the purpose of stimulating archaeological research by State agencies. Although it has no funds for the backing of specific projects, it has served as a fact-finding and correlating body; has supplied, when called upon, advice as to archaeological methods; and has always endeavored to foster the preservation of prehistoric monuments. Furthermore, it is ready to act as a clearing-house for information in regard to past, present, and future archaeological activities, the personnel of investigators, the whereabouts of collections, etc.

## Work of State Agencies

*Alabama.* Archaeological activities in Alabama during the year 1926 have been confined to limited work by the Anthropological Society in the vicinity of Montgomery and in the western part of Walker County. Interesting finds of objects of sea shell continue to be made at the Catoma Creek Cemetery five miles west of Montgomery. A large pipe in the shape of the head and shoulders of a mink, and weighing fourteen pounds, has found its way into the collections of the Tennessee Valley Historical Society at Tuscumbia, Alabama.

*Peter A. Brannon*, Director,
Dept. Archives and History

*Arizona.* From January to June archaeological classes were held in the University and week-end field trips were taken in southern Arizona. Week-ends in May and all of June were spent in surveying and mapping prehistoric irrigation systems about the Casa Grande

ruins and Florence. August and the first part of September were devoted to a study of the early Pueblo culture in northern Arizona. An old round pit-house pueblo located in 1923 was investigated. There were also discovered the remains of another smaller pueblo on a ridge a little to the north. The excavation of a kiva 36 feet in diameter was completed and several rooms were dug. Everything found corroborated former investigations, which indicated an early pit-house type. The people were crude house builders and began the development of the ceramic art. Specimens of the early pottery were collected, the only types found in the ruins of the houses. From September to December courses were given in the University, and class excursions were conducted to prehistoric pueblos in southern Arizona. Investigations were made of the evidences of pleistocene man in our part of North America.

*Byron Cummings*,
Department of Archaeology,
University of Arizona

*Illinois*. The University of Chicago has undertaken an archaeological survey of Illinois with two ideas in mind,—one the training of students, the other to recover as far as possible the prehistory of the state. One group worked in Jo Davies County in the extreme northwestern part of the state; the other in Will and Kankakee Counties near the Indiana border. For two months they spent the time making archaeological maps—locating all existing mounds and indicating former sites wherever definite information could be secured. They also examined all collections in the hands of local collectors, made notes, and photographed all type specimens. In September the whole group were brought together for a month's work in excavation near Galena. In the second week representatives from neighboring museums were invited to join in a three-day conference in the field. In Jo Davies County there were located about four hundred and fifty mounds, about two thirds of which have been disturbed. Conical mounds are in the majority but linear mounds constructed much like Fort Ancient are fairly common. One that extends for 1100 feet along the crest of a hill has long been called a defensive mound, but burials were found at frequent intervals and it seems to have been constructed for the same purpose as the conicals. There are several effigy mounds—bird and animal—in the county, but most have been cultivated so long that the details are largely lost. One "bear" (it may be a beaver) is still very plain, and there is a well defined

serpent mound which extends 260 feet. A pyramidal mound is reported in the region just to the south of the field covered by us, and it is claimed that several cist burials have been found near Galena but we saw none. A real puzzle was encountered near Hanover where more than a hundred conical mounds extend along the crest of a hill and terminate in two huge mounds. Seven of the conicals were opened without encountering anything which might give a clue to their purpose. Permission has been granted to open the large mounds next season.

*Fay-Cooper Cole*

*Indiana.* Systematic investigation of the mounds in Indiana was started last summer when an expedition under the auspices of the Indiana State Historical Bureau was headed by J. Arthur MacLean, Director of the John Herron Art Institute, Indianapolis, and work was begun on a large mound, over three hundred feet across its base and thirty-one feet high, situated near Fairbanks in Sullivan County, Indiana. This mound has been observed for a good many years, and references in regard to it have been published from time to time since 1870. Minor finds have been reported, but not until last summer was a systematic investigation undertaken. The work was financed by subscriptions from private individuals. Twenty-eight burials were opened, several of which were in excellent condition and similar in certain respects to those of the so-called Adena culture. With each burial was a votive offering which varied somewhat in character but included as a rule specimens of flint, stone, bone, tortoise shell and sea shell. The mound itself is an interesting formation, being composed, it would seem, of an outer area of heavy yellow clay or loess, supporting two wind-blown sand dunes on the north and south sides with a gully between filled with a formation of silt and lime. About fifty per cent of this soil is lime and only in this area have burials been found to date. Only a small area has been excavated thus far, but it is expected that the work will go on next season. This season's work will be published as a bulletin of the State Historical Bureau.

*J. Arthur MacLean*

*Iowa.* The season's work of 1926 followed the same lines as in preceding years, except that more time was given to field survey and correspondingly less to research in the literature. The area examined was mostly in northwestern Iowa, though an early spring trip was devoted to the Mississippi bluffs above Dubuque and the nearby

valleys of the Turkey and Volga rivers. Agriculture of recent years has encroached far too closely on the bluffs of the Mississippi and a number of mound groups noted by early writers have been destroyed. Some fine remnants are still in good condition. In northwestern Iowa numerous mounds and village sites were located, especially in the valleys of the Little Sioux and the Big Sioux. Farther eastward, sites on a number of the lake margins show evidences of Algonkian occupation.

*Charles Reuben Keyes*, Research Associate,
The State Historical Society of Iowa

*Michigan.* The plan organized four years ago in this museum for making a survey of the state and investigating the more promising localities has been pursued this season with considerable energy and with gratifying results. Mr. E. F. Greenman has been in the field since June to determine the builders and the uses of various "forts" and semi-inclosures that are quite numerous throughout all parts of the Lower Peninsula. Seventy-one inclosures are known, although many of them have been almost effaced. By far the greater number of these works are of the circular type. But ten or twelve are decidedly rectilinear. Doctor Paul Radin of New York was employed during July and August to undertake an ethnological survey. He spent the time in the field. He reports orally that the tribes, or some of them, show much more significant cultural relations with western peoples than was formerly supposed. Doctor Radin assembled a considerable volume of notes and facts which he contemplates embodying at once in a preliminary report to be published by the University. Of course his intensive work is only the beginning of investigations he is expected to pursue next season. The present writer traveled two thousand miles going from one locality to another, checking up "works", sites, travel routes, waterways and doing a little excavating. Especial attention is being given to early maps, chronicles, and government surveyors' records and field notes, with a view of mapping the state by counties, noting especially Indian trails. Abodes, burying-places, corn fields, sources of chert, rock carvings, mounds, and other earthworks, etc., will be checked in upon these maps. Charts in uniform scale of twelve counties are now nearly completed. In company with Doctor Radin a visit was made to the Beaver Islands in Lake Michigan, where particularly interesting and new data were obtained. Several hundred archaeological and ethnological specimens were added to the Museum's collections, such as

dugouts, paddles, baskets, bags, and basket-making implements, wooden mortars and pestles, snowshoes, household and sugar-making utensils, wampum, pot-sherds, "flints", stone tools, pipes, "ceremonials", maps, books, photographs, etc. A few extensive old corn fields which have escaped the farmers' plows, some of them comprising more than twenty acres each, were platted and modeled. As soon as the season of 1927 opens, field studies and observations will be resumed.

*W. B. Hinsdale,*
Museum of Anthropology,
Division of the Great Lakes,
University of Michigan

*Minnesota.* For lack of funds no archaeological field work has been undertaken by the Minnesota Historical Society during the current year. Plans have been worked out, however, for a state-wide survey of historic sites and markers, to be carried on during the next year or so, and archaeological sites, will, so far as possible, be included in the scope of the survey.

*Willoughby M. Babcock,* Curator,
Minnesota Historical Society Museum

*New Mexico.* Camp was established at Gran Quivira ruin on September 7, work was begun the next day and continued till September 21. In co-operation,with the Department of the Interior, the Museum is planning to establish a local field museum in one of the rooms of the old monastery, and for this purpose the long room immediately south of the mission proper has been chosen. This room was excavated and made ready for next year's repair and installation. Aside from the work on the mission ruins, which is financed by annual government appropriation, some exploration work was carried on with museum funds. This work was confined to some trenching for undisturbed refuse piles and investigation of ruins reported on the Chupadero Mesa, about 14 miles southwest of the Gran Quivira ruins. For this work three Indians were brought from the Pueblo of Zia. In the first two trenches on the north and the west sides of the mission old walls were struck at the depth of 18 inches. No stratified refuse appeared, so the south side of the Pueblo ruins, near the mission, was dug into. A trench running east and west about 15 feet, with another trench running into it from the south slope, revealed a deposit of loose rocks with an occasional pot-sherd clear to the bed-rock, 5 feet below the surface, but no

ashes or other household refuse to make occupational strata. The next trench was sunk into the north side of the main building of the old Pueblo and here well stratified deposits were found, causing hopes to run high for the finding of a key to the sequence of Gran Quivira occupations, until the workmen struck the fireplace of an old abandoned kiva about 4 feet below the surface, marking the place as filled in with material from, probably, the last occupation. The fireplace was found on the last work-day and the kiva was not cleared out, but next season's work will show how it compares in type and size with the other kivas already excavated. The farmers around Gran Quivira have long told of a place on the Chupadero Mesa which they describe as "The Indian Burial Ground", because of the many rocks standing out of the ground like tomb-stones. During a reconnaissance trip to this region thousands of these stones were found to mark the foundations of small community buildings of from two to five and more rooms, extending over an area of several acres, the rooms being from twenty square feet to over a hundred square feet in dimensions. No signs were found of adobe brickes, but the ground around the stones was of an adobe nature, so it might be possible the walls were built of puddled adobe that has all been washed away. Excavation of similar ruins further to the north, near the Montezuma Spring, has revealed flag-stoned floors a few feet under the present surface with burials under the floor. The place investigated this year was, for lack of any known name, called Pueblo Viejo, and as the place was very inaccessible for an automobile, no tools were brought for digging. A good collection of surface sherds was secured, however, and proved to consist of less than one percent of any other ware but Black-on-White. In addition to to the work at Gran Quivira, the Museum conducted excavations for two weeks at Puyé. The work consisted mainly in clearing a small group of cave dwellings at the base of the cliff. In the course of excavation, a considerable quantity of pottery and other material was recovered, which will be used for permanent exhibition in the field museum to be established at Puyé in 1927. A survey was also made of several archaeological sites within the state of New Mexico, in order to determine the advisability of including them among the sites now owned, developed and protected by the State.

*Lansing Bloom*, Assistant Director,
Museum of New Mexico and School of
American Research

*New York.* The Rochester Municipal Museum has undertaken to carry out the archaeological survey inaugurated by the State Museum, and is actively cooperating with the N. Y. State Archaeological Association. Special attention has been given to locating sites of the several Algonkian cultures and to tracing the migration route of the Seneca. During the 1926 season a site of Lamoka Lake, Schuyler County, has been examined intensively. Here a village site with a culture layer over four feet thick attests the persistence of a settlement for perhaps as long as a century. It is of the second Algonkian period and is pre-ceramic. The principal industry of the village seems to have been the drying of fish. The beveled adze occurs here but the grooved axe seems to be entirely lacking. On another level above the lake some crude pottery is found and also other implements more characteristic of the third Algonkian period. During the autumn of 1926 an examination was made of the headwaters of the Genesee and Alleghany where a number of Iroquoian sites of the period prior to European contact were observed. Evidence seems to be conclusive that the Seneca group entered the territory where it was found in colonial times, from the south. At that time, certainly not more than 700 years ago, New York was the domain of the third period Algonkian peoples. The Municipal Museum in its survey is sifting out the culture complex and endeavoring to define each type. This work is principally in the hands of A. C. Parker, Director of the Rochester Municipal Museum, (formerly State Archaeologist) and of William A. Ritchie, Staff Archaeologist.

*A. C. Parker*

*Ohio.* Archaeological activities of the Ohio Archaeological and Historical Society, for the season of 1926, were confined to a continuance of the examination of the great central Mound of the Seip Group, located near Bainbridge, Ross County, Ohio. Exploration of this tumulus, a part of the largest of the several groups of the so-called Hopewell culture in the state, and, next to the central mound of the Hopewell group proper, the largest individual Hopewell-culture mound in Ohio, was begun in 1925. During the first season's examination, a striking group burial, comprising the uncremated skeletons of six individuals—four adults and two children —was unearthed. This group burial occupied a rectangular structure of logs, suggested a charnel house, over and above which covering a space of approximately 14 by 16 feet, had been placed a canopy of

woven fabric, "pegged down" and held in place by more than 100 large bone awls, or skewers. With the burial was found an individual bearing an artificial copper nose; many thousands of pearl beads; ornaments of marine tortoise-shell; and, beneath three large copper breast-plates and preserved by the chemical action of the copper, portions of burial shrouds of woven fabric, in colored designs. Occupying a position above the skeletons, at an elevation of 3 feet and upwards, were found five very large stone tobacco pipes, in the images of birds and animals. These pipes were foreign to the culture of the builders of the mound, and are typical of the territory centering in Tennessee. In addition to numerous typical burials and artifacts, there was disclosed this past summer a ceremonial or sacrificial offering, comprising a finely fashioned copper axe, weighing 28 pounds; 12 copper breast-plates, rectangular or shield-shaped, the latter laid in such such a manner as to cover the axe, overlapping one another as shingles on a roof. Wrapped around the copper axe, and preserved between the overlapping plates, were many thicknesses of woven fabric, of at least four varieties. One of these is a coarsely woven fabric of bark, a second displays fragments of designs in color, a third is woven of flat splints of what appears to be southern cane from the cane-breaks, while a fourth variety is very similar to homespun linen. The last named is in a remarkable state of preservation, being quite strong and without discoloration. One mass of it, preserved between two of the copper breast-plates, comprised 28 thicknesses, and exhibited a finished edge, or selvage. Large areas of suede-like leather, sewed with sinew, and in a striking condition of preservation, lay beneath the large copper axe. Outstanding features of individual burials were the miniature objects, such as breast-plates, shell food vessels and copper axes, placed with the remains of children. A novelty was the finding, with the remains of a child of ten years, of a number of chlorite spheres, of the size of, and apparently serving the same purpose as, the present day marbles. These are engraved with carefully executed conventional designs. At least another season will be required to complete the examination of the central Seip mound, which is 250 feet long, 150 feet wide and 30 feet in height. The securing of vertical cross-section drawings and photographs of this exceptionally large mound represents an unusual accomplishment and entailed no little time and danger.

*William C. Mills*, Director

*Oklahoma.* We had a small crew at work, last winter, in Boone County, Arkansas, practically all of the work being done in two caves. Fine collections were secured from each, including stone and bone implements and weapons, fragmentary earthenware utensils (some of which have been restored) and skeletal remains. The latter have not yet been submitted to a competent osteologist. One noticeable feature of the crania is the fact that eighty per cent of the specimens seem to have had but twenty-eight teeth. Some exceptionally fine bone implements were secured, including long, slender, highly polished needles that might be used for knitting, bone fish-hooks, etc. Many of the smaller flint points were also very delicately wrought. During the months of May, June and July, the field force was employed on excavation work on the site of an Indian village, located on the west bank of the Arkansas River, in the extreme northern part of Oklahoma, within five miles of the Kansas line. As to chronology, the borderline between archaeology and ethnology, is represented as the site dates back slightly less than two centuries. Apparently, this village was subsidiary to a French trading-post located two miles below on the river bank. The ruins on this site consist of low, circular tumuli, each being the ruin of a timber-framed, dome-shaped lodge or hut. The work was done cooperatively, Mr. E. W. Marland, of the Marland Oil Company and the Marland Refining Company, having financed the undertaking with the understanding that the collections secured should be divided, half to go to a museum he has projected at Ponca City. Fine collections of bone and stone implements were secured, the former being in a very fair state of preservation; with these also came much in the way of vestigia from the wares obtained by barter from the French traders of the first half of the 18th century, so that the collection as a whole is representative of a primary co[illegible]t between the Stone Age Caddoans (Wichita, Towakony, W[illegible]Keechi, etc.) with the European culture from France. The [illegible]mitive culture had remained practically unaffected by that of exotic origin, except that stone axes, hatchets, hoes and knives had largely been replaced by iron tools designed for the same purposes and made by the smith at the trading-post. The number of "snub-nose" or "turtle-back" skin-dressing picks far exceeded that of any other site hitherto worked or examined by us, the abundance of the same furnishing conclusive evidence of the zeal and industry of the women of the village in working buffalo hides into finished robes on a wholesale

commercial scale. Incidentally, it is worthy of mention that this village site was on the upper part of a hill which, for a distance of nearly a mile, has a nearly uniform slope of about twenty degrees toward the river bank. The top of this hill has an elevation of from 125 to 150 feet above the level of the river at low water. At a distance varying from 150 to 300 feet from the edge of the channel of the river, the sloping surface of the hill is broken by a precipitous, cliff-like face of massive limestone strata, for a distance of fully three quarters of a mile, averaging nearly forty feet in height throughout that distance and having but few places of ascent and descent. It is believed that buffalo may have been killed in quantity at times by driving them over this cliff, though we have not as yet attempted to secure proof of this conjecture. Recurring to the use of the "snub-nose" or "turtle-back" skin-dressing pick, it is worthy of remark that this represents a bit of culture which must have been absorbed or borrowed from the people of some other stock, since the Caddoan peoples of two or three centuries previous to the period during which this site was occupied do not seem to have been familiar with the use of such an implement. The clay pipes, which might be roughly described as resembling two cones, joined near their apices, were found to be practically identical with those of the ancestral stock of a few centuries earlier. The earthenware pottery—all in fragmentary condition—shows many of the same forms and kinds of decoration but is so much coarser than the earlier Caddoan ceramic wares as to indicate a pronounced cultural decadence. One find was a piece of bright red ware, quite thin, with decorations scratched upon the surface by a hard, pointed stone after it had been burned, thus identifying it with the wares secured from the Proto-Siouan mound which our party had excavated near the confluence of the Elk, or Cowskin, and Neosho, or Grand, rivers, in northeastern Oklahoma, in the summer of 1925.

*Joseph B. Thoburn*, Curator,
Oklahoma Historical Society

*Pennsylvania.* In March, 1924, the Wyoming Historical and Geological Society, Wilkes-Barre, Pennsylvania, decided to undertake an archaeological survey of Eastern Pennsylvania, in view of the scientific necessity of such a comprehensive study and exploration of the territory, since less is known about the Indian occupation of Pennsylvania than about that of almost any other state in the Union.

The original limitation to Luzerne County, being too arbitrary, the plan was extended to the natural one of the Susquehanna watershed. But as this left uninvestigated, in the Eastern part of the State, only the fringe of nine counties bordering the Delaware River, and as the territory represents a unit of tribal culture, it was decided to include the 47 counties lying between the Alleghany Divide and the eastern boundary of the state.

The plan for the survey consists of three parts. The first, a paper survey, to ascertain the possibility of archaeological remains in the state, is the only part completed and has brought definite proof of the opportunity and need of this study. This is only preliminary to the second part, the field work, to be based on the findings of the paper survey, and of research in printed and manuscript records and books. This, together with the third part, the editing and publishing of the results in a series of atlases, histories, descriptions of sites, collections, artifacts, etc., must await the establishing of the large fund needed. The paper survey was made by sending out various types of circular letters, containing question blanks and broadsides, to different groups of people, such as postmasters, foresters, grange and society officers, leaders of groups of people, Boy and Girl Scout leaders, individual collectors and known experts in the region. More than 13,000 such letters were mailed and the returning question blanks and letters brought an astounding amount of information. Of the two thousand questionnaires returned, (one out of every six mailed) nearly eight hundred brought a great deal of information, practically one thousand more gave considerable, while less than three hundred brought nothing. More than four hundred and fifty separate offers of help in exploring the sites came from especially informed individuals. Ownership of over twelve hundred collections, mostly large ones, is now listed, ready for study. Many local archaeologists marked trails and sites on maps of their own special districts, and gifts of books and manuscripts were made to the society. The newspapers throughout the region published and sent out articles, explaining the survey and asking all individuals who had found Indian artifacts to communicate with the society. Through these means, it was possible to locate 1900 definite sites on a map of the State, stamping each locality named, with a small green circle. This indisputably determines the need of the investigation and gives ample basis for it. Other localities will be found as investigation proceeds. The returns are all arranged under county heads

and the information they contain is being catalogued on a colored card system, according to the kind of material reported, and arranged geographically. The names of all offering help are listed for the later field work. The survey has been endorsed by the Pennsylvania Federation of Historical Societies, Pennsylvania Historical Institute, the American Anthropological Association, the Philadelphia Academy of Natural Sciences; the National Research Council, the Museum of the American Indian, the American Museum of Natural History, the New York State Museum, and the Rochester Municipal Museum. The leading archaeologists, anthropologists, and historians of the country have expressed approval and interest in the undertaking. Working on the premise that $150,000 ($3,000 per county) in money and five years in time will be required, it is proposed to divide the financial responsibility between organizations in the counties and individual donors, to be paid in at one time, or on a five year bases. All articles found are to be left with a recognized, functioning organization in each county, and each organization and individual donor of a sum not less than $500 is to receive a set of the publications. An administrative body is to be formed of representatives of the contributing organizations and individuals, and the actual investigations are to be made by trained workers under a Director General. As the possibility of securing this cooperation depends upon widespread publicity, arrangements are being made for presenting the subject to organizations with a state-wide interest, and county representation, by addresses, circular letters, and personal interviews. Photostats of the map showing the 1900 sites have been distributed to historical societies, and interested individuals, and a large poster, showing the map and explaining the Survey has been placed in the Pennsylvania Building at the Sesqui-centennial. A postcard size reproduction of the map has been made for use in arousing interest.

*Frances Dorrance*, Director

*South Dakota.* During the summer of 1923 we continued our investigations in the eastern part of the state. About twenty mounds were opened along the west sides of Big Stone Lake Traverse in Roberts County. Maps were made of groups not excavated. All examined were burial mounds; and twenty-five skulls, including a few skeletons were added to the anthropological collection in the University Museum. A group of mounds were mapped that are located at the mouth of the Turtle Creek near the James River,

Spink County. Another group was found along the Firesteel Creek in Davison County. These two groups are about the western limit of habitation of the mound builders in the state. Near the mounds on Firesteel Creek there is another village site of a different culture and considerable excavation was done in the refuse heaps and around the old lodge circles. The pottery fragments and artifacts gathered resemble somewhat those of the Arikara but their origin is still in doubt. Then, too, no Arikara village has heretofore been found away from the Missouri River. In 1924 two mounds of a group of six were opened which were located on a high terrace along the Missouri River in the western part of Yankton County. Both were burial mounds and one contained sixteen skeletons that had been deposited together. None were intact, which showed that originally they were scaffold burials. Several weeks were spent in work in Ludlow Cave of the "Cave Hills" district of Harding County. Sixty cubic yards of the old floor of this cave was screened. The formation was sandy and the old floor had built up about three feet. Three cultures were discovered in this cave, the Sioux near the top, the material consisting of trading beads, brass or copper rings and wristlets (including one gold finger ring) fragments of buffalo skins and two scalps of white men. About two and one-half feet down and near the entrance there were many bone tools; while three feet down, and on or near the original floor and extending back thirty-five feet from the entrance we found several hundred exquisite arrow-points of semi-transparent material, bone beads, shell beads of fresh water and marine shells (the latter from the Pacific Ocean), a few beads of native copper, elk teeth used as beads or pendants, and two fragments of woven baskets or mats. Many of the arrowpoints still had the sinews around the neck of the base that had fastened them to the shaft. The culture of the older floor can hardly be related to the Arikara or Mandans, but rather to some western tribe that spent a winter or summer here. There is a spring of water near. Across a ravine from the cave and on an exposed rock wall there are many grotesque figures of animals. These were photographed or drawings were made for use in a final report. Later on this season we discovered a large quartzite quarry in the southern part of the Black Hills. This was in an almost inaccessible place northeast of Edgemont, Fall River County. This old prehistoric quarry covered an area of at least 160 acres and exhibited many deep excavations. Millions of tons of surface rock had been removed by primitive methods to

reach the suitable material below. This quarry is equal to, and belongs in the same period as those near Manville and Lusk, Wyoming. Other small quarries were found along French Creek in Custer County. A few days were spent in 1925 in making photographs and drawings of pictographs on cliffs along the Cheyenne River within four or five miles of the above-mentioned quarries. During 1926 only one mound was excavated, which is located on the west side of Oakwood Lake, Brookings County. While our work at this mound is not completed, it yielded two skeletons and a stone bar amulet or a boat stone; if the former, it was not finished, as it lacks holes at the ends. As far as known it is the only piece of the kind found in the state. Most of our notes are ready for publication, but additional work should be done before attempting a preliminary report of the state, and we are waiting for funds and time.

*Wm. H. Over*, Curator

*Tennessee*. In February and March, 1926, with a force of six men, the State Archaeologist spent twenty-seven days in field work upon the farm of Hill Taylor in Cheatham County, in the area commonly known as Mound Bottom. There are fourteen distinct earth mounds in this area, the largest of which, called the Temple or Sacrificial Mound, is 25 feet high, 265 feet long, and 156 feet wide. It is a truncated pyramidal structure. Partial excavation disclosed extensive beds of ashes, floor levels, etc. Stone graves, eighty-six in number, were opened in the vicinity. Ten days were spent in Sewart County in the neighborhood of Dover, in the examination of a very extensive quarry, where flint nodules were extracted, and the preliminary chipping of implements was done. Across the river from Dover, on the Hogan farm, eighteen stone graves were opened. In May and June examination was made of caverns in Pickett and Overton Counties. Evidence of human occupancy was found in the form of ash-beds, bone and stone implements and skeletal remains. Assistance in financing the above work was rendered by Beloit College, and Phillips Academy, Andover. A report has been published in *Journ. Tenn. Acad. Sci.* Vol. I, No. 3.

*P. E. Cox*, State Archaeologist

*Texas*. We have continuously investigated the Burnt Rock Mounds of Central Texas and during the last ten years our students, now scattered throughout the State, have been sending in specimens and information from outlying parts of the State. This gives us an

ever increasing knowledge of the general situation and will enable us to prosecute work to good effect once we begin active field work in a continuous way.

*J. E. Pearce,*
Department of Anthropology,
University of Texas

*Utah.* A party from the Department of Anthropology, University of Utah, excavated during the autumn months in two burial mounds associated with pueblo ruins west and southwest, respectively, of Blanding San Juan County. About 200 specimens of pottery were recovered, principally black-on-white ware. A few specimens occurred of black-on-red, and of corrugated, the latter in the form of large jars. Thirty graves were opened; these were all so shallow that the skeletons had suffered almost complete disintegration, crumbling as soon as touched.

*A. A. Kerr*, Director.

*Wisconsin.* Full reports of the 1926 archaeological survey and other activities have not yet been received by the Wisconsin Archaeological Society from its field workers. The frequent rainy periods of the spring and summer interfered very greatly with the surveys and investigations planned by the Executive Board of the Society early in the year. In June a reconnaissance was made of certain districts in several northwest Wisconsin counties which has resulted in both securing valuable archaeological data and in stirring up local interest in state surveys. During the summer and fall, field work was conducted in different parts especially of Dane, Winnebago, Marquette, Dodge, and Jefferson Counties. Work about Rock Lake in Jefferson County has been completed and a preliminary report is being published. A report on Columbia County is also to be published. Mr. C. E. Brown has given talks and lectures in a number of localities with the idea of arousing public interest in the state survey. Two quite valuable archaeological collections, both from Milwaukee County, have been added to the State Historical Museum. The preservation to the public of Indian mound groups and other notable remains has kept pace with exploration work. Additional mound groups at Madison and in other parts of the state have been marked with tablets. The marking of others is now being planned for. The construction of golf courses in many localities in Wisconsin has provided an additional means for preserving local antiquities in public grounds.

*Charles E. Brown*, Director.

*Canada.* Harlan I. Smith, Archaeologist, of the Victoria Museum, Ottawa, which occupies the position of a National Canadian Government Museum, continued the work of restoring, preserving, and recoloring totem poles in the Skeena River Valley of British Columbia. He secured notes on numerous archaeological sites, and visited two new petroglyph sites near Prince Rupert. One is on the sloping rocks of the beach of a little bay in the south side of an island on the main channel between Prince Rupert and Netlakatla. The other is on the mainland north of the same channel, but slightly nearer Netlakatla. It represents a human form at length. A practical method has been developed of casting pictographs in concrete for museum display. W. J. Wintemberg made an intensive exploration of a pre-European palisaded Tionontati village site in Simcoe County, Ontario. The site is situated on the more or less level top of a hill about forty feet high. The vegetal products found in the refuse heaps of the site consist of carbonized corn (cobs and kernels), beans, sunflower seeds, squash stems, and plum pits. Arrowpoints were predominantly of the triangular type. Quantities of potsherds were collected as well as stone adzes and celts, antler flaking punches, bone awls (one made from a human ulna), bone netting-needles, stone and pottery pipes, and beads of stone, bone, freshwater and sea shells. Although a few scattered human bones were found, no graves were discovered. The culture possesses many features in common with that of sites in Victoria County and more remotely with that of the Roebuck village site and Hochelaga. The material found suggests that the Tionontati and Hurons should be included in what Skinner calls the Eastern or Mohawk-Onondaga group rather than with their near neighbors, the Neutrals of the Western group.

Later in the season two supposed ossuaries on the Edmonds farm in Nottawasaga township were tested and found to be natural hollows. The cemetery in Norfolk County (about nine miles west of St. Williams), where a perforated human skull had been found was not excavated. The pottery secured at the site shows that it was of the same culture as the Uren village site, in Oxford County, which was probably occupied by early Neutrals. A site examined at Lake Medad did not disclose anything which would indicate that the people who inhabited it, were Iroquois from New York state, rather than Neutrals as is generally believed. The site has been too well dug over by local collectors to be worth the expense of excavation.

*Harlan I. Smith.*

## Work of Museums and other Institutions

*American Museum of Natural History.* Field researches in America were limited to the archaeology of the Southwest, three expeditions being organized: (1) Ogden Mills Expedition. Mr. Earl H. Morris in charge of this project explored a prehistoric salt mine at Camp Verde, Arizona, and carried on systematic excavations at the White House Ruin in Canyon de Chelly. (2) Mrs. William B. Thompson Archaeological Expedition. Under the direction of Mr. Erich Schmidt systematic excavations were conducted at sites near Superior, Arizona, a continuation of the work of the previous year. (3) Fifth Charles L. Bernheimer Expedition. Mr. Charles L. Bernheimer conducted explorations in person in the general region north of Navajo Mountain, west of Piute Canyon, and east of Bridge Canyon. A number of promising archaeological sites were located, and incidentally important palaeontological discoveries were made. Finally, a new natural bridge, which has been named Hawkeye Natural Bridge, was discovered.

*Clark Wissler*, Curator-in-chief,
Division of Anthropology.

*University of California, Department of Anthropology.* Mr. W. Egbert Schenck, honorary assistant curator, Museum of Anthropology, studied the large private collection of archaeological material in the possession of Mr. Elmer J. Dawson and joined Mr. Dawson in archaeological work in the Delta region of California. Baron Erland Nordenskiöld, professor at the University of Gothenburg and lecturer at the University of California during the fall semester of 1926, conducted archaeological excavations near Lodi. He was assisted by a number of graduate students at the University of California. This investigation was financed by the Museum of Gothenburg, of which Professor Nordenskiöld is director, and the specimens belong to that institution. Mr. Julian H. Steward, a graduate student of the University of California, continued researches in the Columbia Valley in the region of The Dalles, this work being made possible by the generosity of Major Henry J. Biddle of Vancouver, Washington.

*Robert H. Lowie*, Chairman

*Columbia University, Department of Anthropology.* Located upon an island in the Oconee River swamp eleven miles south of Milledgeville, Baldwin County, Georgia, are two mounds. This land is part

of the plantation owned by Mr. J. W. Shinholser of Macon, Georgia, and is known as Indian Island, the site of an old Creek town. The smaller of the two mounds, height 10 feet, circumference of base 278 feet, was opened and proved to be less rich in finds than had been expected. The skeletal remains of the five burials could not be saved because of the state of decay. Potsherds, beads, and broken stone implements, though not abundant, constituted the types of material found.

*Margaret E. Ashley,*
Johnson Hall, Columbia University

*Museum of the American Indian, Heye Foundation.* An expedition collecting archaeological specimens in Salvador was headed by Dr. S. K. Lothrop. We have also had expeditions in Sonora and Sinaloa, Mexico, under the leadership of Mr. E. H. Davis and Mr. G. W. Avery. During the first five months of 1926 we continued our researches in Pueblo Grande, Nevada, under the direction of Mr. M. R. Harrington. Mr. Donald Cadzow has spent four months in Saskatchewan, and its vicinity, collecting ethnological material from the Indians still residing there. Mr. Charles O. Turbyfill has excavated some mounds during the summer in North Carolina. We have also continued local archaeological researches on Long Island and other points in the vicinity of New York City by Mr. Foster H. Saville. We also had two ethnological expeditions in the lesser known parts of Brazil, headed by Colonel Fawcet and Mr. Gow-Smith.

*George G. Heye,* Director

*National Geographic Society.* On October 15, the Society concluded the sixth season of its explorations in Pueblo Bonito, the greatest of the prehistoric villages in Chaco Canyon, northwestern New Mexico. From their inception in 1921, the Pueblo Bonito expeditions have been under the direction of Neil M. Judd, Curator of American Archaeology, U. S. National Museum. The major efforts of 1926 were directed as during the previous season, towards search for deeply buried walls belonging to earlier periods of occupancy than that represented by the final ground plan of Pueblo Bonito. Four principal periods of constructional activity are represented in existent remains of the ancient village; during each of these successive periods both the type of masonry and the outline of the village changed. The recovery of these earlier ground plans—so essential to the complete history of the settlement—has been one of the Society's objectives

during the field seasons of 1925 and 1926. It has been found, also, that the pottery manufactured and used by the Bonitians underwent a noticeable evolution in technique at the same time that more substantial types of masonry were being developed. In addition to the principal explorations in Pueblo Bonito, researches inaugurated in 1924 in Pueblo del Arroyo were brought to an end the past season. The relationship between Pueblo del Arroyo and Pueblo Bonito is now fairly well established. Two small-house sites in the upper drainage of Chaco Canyon were also excavated in 1926, under permit from the Department of the Interior. The purpose of these latter investigations was to ascertain the probable position of such lesser habitations in the chronology of the Chaco Canyon area. Geological and botanical investigations were also continued in a further endeavor to determine the extent of those geophysical changes which apparently have taken place since abandonment of Pueblo Bonito. Each phase of the Expedition's researches has been enriched by new data, obtained during the recent field season. Doctor A. E. Douglass, of the University of Arizona, also made further progress in his "tree ring" investigations, under the auspices of the Pueblo Bonito Expedition. Although final conclusions have not yet been reached, the large number of beam sections recovered from Pueblo Bonito and Pueblo del Arroyo, together with additional specimens from other localities in the Southwest, leave Dóctor Douglass still hopeful that an absolute date may yet be placed upon Pueblo Bonito.

*Neil M. Judd,*
Director Pueblo Bonito Expedition

*Peabody Museum of Harvard University.* The exploration of Swart's Ranch Pueblo in the Mimbres Valley of southwestern New Mexico was continued by Mr. and Mrs. C. B. Cosgrove, under the general supervision of Dr. A. V. Kidder. During this season's work 33 rooms were cleared, making 116 rooms in all that have been explored. The excavations were carried beneath the floors of the rooms, sometimes to the depth of 9 feet before disturbance of the soil by human agency disappeared. Seven of the rooms were of early construction and were below the level of the main pueblo, one being of the pit-house type with an inclined passage extending from the room to the surface of the ground. As the work progressed toward the north end of the ruin, several larger rooms were encountered. The masonry became more massive. An innovation appeared here

in the construction of small openings in the inner walls, too small for a person to pass through but suitable for communication and for passing small articles from one room to another. Two hundred and thirty burials were uncovered with the usual offerings of pottery, beads, and other trinkets. Nearly all of the burials were below the floors of the rooms, the bodies being interred in a semi-flexed or closely flexed position. Some 200 pottery vessels were recovered, decorated in the beautiful patterns typical of the Mimbres culture. The remainder of the collection consisted of small articles of bone, stone, shell and turquoise.

A cave 8½ miles from this pueblo was also excavated. It was situated in a side canyon tributary to the Mimbres River. Potsherds, fragments of basketry, and fabrics of various kinds were recovered, showing conclusively that they belong to the Mimbres culture.

Dr. H. J. Spinden, in connection with the Spinden-Mason Archaeological Expedition, carried on work in Middle America for a portion of the year. From Belize the Expedition skirted the coast northward along the Yucatan Peninsula, making excursions inland by means of rivers. Ruins of about 50 buildings were discovered, some of which were of great interest. From Yucatan the party went eastward and southward along the northern coast of Honduras visiting the Bay Islands and examining the ancient cemetery under the high limestone cliffs. Reaching the Plantain River on the mainland it was ascended and the sites along its shores examined. A collection of pottery, grinding-stones, and other implements was secured from these sites which is now on exhibition in the Museum; also a collection of flutes, drums, carrying bags, and other objects from the Puya Indians, who accompanied the Expedition up the river.

Mr. W. B. Cline continued his investigation and survey of the ancient earthworks in the Sudbury Valley of Massachusetts, a considerable number of which are new to local archaeologists.

*C. C. Willoughby*, Director

*University of Pennsylvania, Department of Anthropology.* In connection with the ethnological survey of Labrador and the Northeast, an approach is being made to the archaeological problems of the area. Surface conditions are also being observed in the region of lower Delaware.

*Frank G. Speck*, Director

*Survey in Arizona.*[1] The survey is limited to a specific area, about forty by forty miles, lying between the Little Colorado River and the San Francisco Mountains, extending north from the Santa Fe Railway to Black Mesa, half way to Tuba City. Within this area it has been my aim to plot as accurately as possible every site and describe briefly the size and condition. In most cases I have been able to locate the section boundaries even on the Painted Desert up to the edge of the Navajo Indian Reservation. Over most of the area I had as base maps the land office plots and the excellent maps of the Coconino National Forest. On the reservation the maps are poor and the errors of the plot greater. Over seven hundred ruins have been placed on the map. The general conclusions from this study are embodied in a paper in the hands of the Bureau of Ethnology. This year I have a few more ruins to add. The survey began in the summer of 1916 and was continued in 1919, 1921, 1923, 1925, 1926.

*Harold S. Colton*, University of Pennsylvania

*Phillips Academy, Andover, Department of Archaeology.* Work begun in 1925 was continued last spring at the famous Etowah site in Northern Georgia. Mrs. Tumlin, the owner, permitted extensive excavations. About 50 graves were uncovered, photographed and mapped, making a total of 100 for the two seasons. By the use of ambroid and paraffine some fabrics and portions of wooden handles of tools were preserved. Several highly decorated gorgets of shell, great quantities of bone heads, copper plates, on which are human figurers and a long delicately chipped flint of problematical form, constitute the chief finds. Several observers suggest a parallel between the human figures on the gorgets and coppers with those on monuments in Yucatan. Certainly the resemblance is striking. A large monolithic axe and a flint sword some 20 inches in length, on each side of which are worked projects in flint (requiring great skill) are two of the best finds. A collection has been presented the State Museum at Atlanta. The seventh season of excavation at the ruins of Pecos, New Mexico, lasted from June to September. Survey work and a short series of stratigraphic tests were carried on at the main ruin, but the greater part of the summer was spent in digging at a pre-Pecos site about one-half mile to the southwest. The ruins are

[1] Dr. Colton's archaeological work has been conducted by him personally in the cause of other researches (A. J. K.)

those of a very large pueblo of straggling form, and presumably of low elevation. The walls, being of adobe, proved hard to follow, but some fifty rooms were excavated, and about as many skeletons taken out. Mortuary offerings of pottery, pipes, beads, etc., were recovered. The ceramic remains belong to a period earlier than that of Pecos proper; among them are many pieces obtained in trade from the Little Colorado area, or made locally by immigrants. Evidence was found that the pueblo had been partly burned, and possibly it was destroyed by hostile Indians. It seems likely that it was inhabited by the direct ancestors of the Pecos, who abandoned this comparatively unprotected site for the greater security of the Pecos mesa.

*Warren K. Moorehead*, Director

*San Diego Museum.* The greater part of 1926 has been devoted to work in the Museum. It is planned to begin, if possible, the exploration of the counties of San Diego and Imperial before the end of this year. It is known that at the time of the Spanish arrival this country was occupied by Indians who have since been making a plain pottery; but as scattered traces of a decorated black-on-white pottery have been brought in, it is desired to follow up these traces. Excavations are also planned for the Mimbres region in New Mexico, during April and May, 1927—tracing back the earlier pit-house development, and segregating it from the later period by excavating in sites that show no traces of the later surface houses.

*Wesley Bradfield*, Associate Director

*The Southwest Museum, Los Angeles, Cal.* Arizona. The summer season was spent in a superficial survey of Sycamore and Beaver Creeks, eastern tributaries of the Verde. A minimum of excavating was attempted as potsherds were chiefly desired, the masonry and house-types having already been described by Fewkes and Mindeleff. The factor of persecution, as a cause of depopulation, is strongly emphasized in this area, where one finds ruins 1500 feet above the nearest water and where almost every canyon shows some evidence of of fortification; the barren quality of the culture should probably be ascribed to the same cause, rather than to lack of ability or industry on the part of the former occupants. The later period is marked by the ubiquitous red ware of the Gila regions, both porous and smoke-blackened, and the coarse brown ware which resembles the pottery of Southern California. There is also a Black-on-White period of

open house-sites which undoubtedly antedates the red ware period and which would probably repay further investigation.

California. During October and November of 1925 investigation was carried on along the northern borders of the Chumash country, where the Coast range dies out into the San Joaquin Valley. The Stone Cultures of the coast are all represented in the Cuyama Valley but, as on the coast, are lacking in significance owing to the absence of stratigraphy. It was hoped that the monotony of Stone Culture might be vitalized by more significant cave material but this quest was unfortunately terminated by early rains. During the winter of 1926 several sites were visited in the vicinity of Santa Barbara, both along the coast and in the Santa Ynez Valley, all of which tended to a growing conviction that new light on Californian aboriginal culture must be sought in caves rather than along the open coast, where probably 90 per cent of the culture has disappeared.

*Harold S. Gladwin*, Acting Curator of Archaeology

*West Texas Historical and Scientific Society.* The Society has its headquarters and museum at Sul Ross State Teachers College, Alpine, Texas. Its major activities extend throughout that portion of west Texas known as the Trans-Pecos or Big Bend section. This territory should be of particular interest to the anthropologist because of its proximity to the Cliff-dwelling area to the west and the Plains district to the east. The first anthropological investigation undertaken was a survey resulting in the location of 115 sites showing evidence of former Indian occupation. Data concerning these sites have been collected in the form of field notes, maps, photographs, drawings, and museum specimens. The whole Trans-Pecos area is characterized by a rugged topography, many of the peaks being over 8,000 feet above sea level. This broken country has afforded an opportunity for the second study, namely that of dry rock shelters containing prehistoric relics which, under ordinary conditions, would long ago have perished. The shelters have yielded sandals, basketry, wooden implements, beads, evidence of the foods used, a little pottery (now being further investigated), skeletal remains, as well as the expected variety of stone artifacts and camp refuse. A third study has concerned the pictographs and petroglyphs of which record has been made of some sixteen locations. Examples in the district range from a single small graph, to groups containing a drawing over twenty feet high. The future work of the Society contemplates publication

and a continuance of the museum and field work with particular attention to a complete investigation of several typical sites, in order that a full record of past cultures may be made, and the data secured placed at the disposal of those who may be interested in study or comparisons.

*Victor J. Smith*

*United States National Museum and Bureau of American Ethnology.* Excavation and repair of Elden Pueblo, 6 miles east of Flagstaff, Arizona: A large collection of pottery was recovered, and the walls of the building, of which nearly 40 rooms were excavated, were repaired and strengthened with cement. This work was directed by J. Walter Fewkes, Chief, Bureau of American Ethnology. Survey and explorations of a group of aboriginal remains near Marksville, La.: A scarcity of specimens was noted, and only traces of bones were found in the graves. This work was conducted by Gerard Fowke. There was an archaeological reconnaissance of the upper Columbia River Valley, Washington, where numerous sites were explored. Kasaan National Monument, Alaska, was examined by H. W. Krieger, Curator of Ethnology, U. S. National Museum, with a view to restoration; conditions, however, were found to be very discouraging, owing to recent fires and the continuous process of rotting and disintegration of the totem poles, etc. Archaeological reconnaissance of Louisiana and Mississippi: A number of mounds were examined, many earth mounds and shell heaps being found throughout the low-lying coast of Louisiana. In addition to cultural material collected, a number of undeformed skulls were obtained. This work was conducted by H. B. Collins, Jr., Assistant Curator of Ethnology, U. S. National Museum. Exploration of fossil beds in the vicinity of Melbourne and Vero, Florida, for fossil bones and possible human remains: The main object of this exploration, undertaken by J. W. Gidley, Assistant Curator of Vertebrate Palaeontology, U. S. National Museum, was to verify the observations of a previous expedition and to obtain any new evidence possible. Several mounds were visited and examined. A survey was also made of mounds south of Melbourne. Archaeological reconnaissance of Alaska and Islands of Bering Sea, for the purpose of tracing all possible clues as to man's antiquity, and his old migrations in these regions: The trip extended for over 900 miles along the Yukon; to the Islands of St. Michaels, St. Lawrence and the Diomedes in the Bering Sea;

and along the coasts of the Seward Peninsula and Arctic Alaska from Golovin Bay to Point Barrow. A large collection was gathered of archaeological and skeletal material, and a number of old sites of human occupations were located. A series of photographs and observations was made, which will help to settle the problems of the racial relation of the Indian and the Eskimo. This survey was directed by Aleš Hrdlíčka, Curator of Physical Anthropology, U. S. National Museum.

*J. W. Fewkes*, Chief, Bureau of Ethnology

A. V. KIDDER

# ANTHROPOLOGICAL NOTES

## Report of the Delegates of the American Anthropological Association to the Social Science Research Council for the Year 1925

At the close of the winter meeting of 1924 the Council of the American Anthropological Association accepted the invitation to join the Social Research Council and the following representatives were appointed: Doctors Wissler, Wallis, and Cole. At present the Research Council consists of the following organizations: American Historical Association, American Political Science Association, American Sociological Society, American Statistical Association, American Economic Association, American Psychological Association, and American Anthropological Association. These seven organizations are brought together for the purpose of promoting the interest of scientific research in the field of social inquiry, particularly in cases where problems overlap the boundaries of one or more of the special fields concerned. It is believed that with the seven organizations now united it will be possible to advance the prospects of social science by the study of methods, and by coordination of scattered types of inquiry otherwise independent and isolated.

During the year 1925 the Council appointed a special committee on Problems and Policy for the purpose of considering certain special questions already before the Council, as well as others, and of canvassing the general policy to be followed by the Council. This committee held a ten days' session at Dartmouth during the summer and as a result of its deliberations it was decided to continue it as a standing committee with power to appoint special advisory committees to consider the formulation of problems, to analyze problems into parts susceptible of scientific treatment, to study the character and scope of the investigations which seem desirable, and to suggest agencies whose cooperation can profitably be enlisted in the work. On recommendation of this committee the Council adopted the following general policies in respect to research:

A. Ordinarily it will be the policy of the Council not to undertake investigation directly, other than preliminary studies;

B. Ordinarily the Council should deal only with such problems as involve two or more disciplines;

C. Generally it should be the policy of the Council to serve only as a clearing house in matters of research in the social science field.

Furthermore it was determined by the Council to undertake the gathering of pertinent information concerning research projects, personnel, funds and endowments available for research. It was understood that the Council would cooperate with any other agencies interested or engaged in similar enterprises in overlapping fields.

During 1925 the general administration expenses were cared for by the Russel Sage Foundation, but with the growth of the Council activities other foundations have indicated a willingness to participate in the work. In this year funds were made available to the Council for the purpose of awarding fellowships to advanced students desiring to carry on research in the field of social science. Funds to cover the fellowships for a period of five years have been provided by the Laura Spelman Rockefeller Memorial. In the year 1925 the sum of $49,000 was available for this purpose. (These awards have already appeared in the AMERICAN ANTHROPOLOGIST.)

A number of special studies were undertaken by committees of the Council, among which were: a) A study of the relation of the mechanization of industry to migration; b) Study of human migration—in cooperation with committee of the National Research Council; c) A committee was appointed on Indexing and Digesting the session laws of various states, as an aid in the study of American legislation; d) A committee on Social Science Abstracts; e) A committee on Survey of Social Science Agencies, with special reference to method, and with the hope of developing closer coordination of social research projects.

While still in an experimental state the Council has made substantial progress both in more effective organization and in dealing with specific problems. With the addition of Anthropology and Psychology to the Council many new projects closely related to these disciplines are being undertaken, as the report of 1926 will show. Suggestions for making the Council more valuable to the social sciences or to those interested in the social implications of natural science will be welcomed.

FAY-COOPER COLE,
*for the Committee.*

## Duke de Loubat

The death of the Duke de Loubat in Paris was announced on March 1, 1927. Joseph Florimond Loubat, who received his ducal title from Pope Leo XIII, was born in New York City on January 31, 1831, and was hence ninety-six years old at the time of his death. He was the only child of wealthy parents and spent much of his time in Europe where he was educated chiefly at Heidelberg.

Loubat early took an interest in anthropology, history, and especially archaeology; he also did much toward financing scientific enterprises. His principal benefaction was the gift of $1,100,000 to Columbia University. Other gifts to Columbia included valuable books and manuscripts and two prizes to be awarded every five years by the University for the best works written in English on the history, geography, archaeology, philology or numismatics of North America. Loubat endowed three professorships of American Archaeology; one at Columbia University, one at the University of Berlin, and one at the College de France in Paris. He also performed a signal service to American Archaeology in causing to be reproduced in facsimile several of the more important Aztec codices.

Loubat's services to the Roman Catholic Church were so highly appreciated that in 1893, Pope Leo XIII conferred on him the title of "Duke de Loubat." The French Government had already made him a "Commandeur de la Légion d'Honneur"; later, in 1907, he was elected a foreign associate member of the French "Académie des Inscriptions et Belles-Lettres."

Although living in Paris during the last thirty years and more of his life, the Duke de Loubat retained membership in the American Museum of Natural History, the Metropolitan Museum of Art, the New York Historical Society, and the following New York Clubs: Union, Knickerbocker, Union League, University, and New York Yacht and Tuxedo Club. He never married.

George Grant MacCurdy

## Léonce Pierre Manouvrier

One of the world's leading anthropologists, Léonce Pierre Manouvrier, died at his home in Paris on January 18, 1927, in the seventy-seventh year of his age. He is survived by his widow and one son.

Manouvrier was born at Gueret, Creuse, on June 28, 1850, and received his degree of M. D., with the distinction of *Laureat*, from

the Faculty of Medicine, Paris, in 1881. He began his professional career as an assistant to the noted anthropologist Paul Broca in the Broca Laboratory. After Broca's death, Manouvrier succeeded to the Directorship of the Laboratory which then became one of the laboratories of the *Ecole des Hautes Etudes*. This laboratory under Professor Manouvrier continued to be a center to which students and specialists from all over the world came. At the time of his death, Manouvrier also held two other positions, namely, Director of the Physiological Laboratory of the Collége de France and Professor in the *Ecole d'Anthropologie de Paris*. He had been General Secretary of the *Société d'Anthropologie de Paris* since 1902.

As an author, Manouvrier, who always signed himself simply as "L. Manouvrier," has left approximately 150 original memoirs and papers on anthropology and related subjects. These include memoirs on Anatomy and Physiology; Morphological variations of the Human Brain, of the Skull, and of the Skeleton; Human Evolution; Abnormal Variations of the Human Body; Relation of the Volume and Form of the Brain to Intelligence; Proportions of the Human Body; Anthropometry; Anthropological Technique; Psychological Concepts; Will; Temperament; Aptitudes. His memoir on *Pithecanthropus erectus* was translated into English by the present writer while the latter was one of his students in the Anthropological Laboratory of the *Ecole des Hautes Etudes*.

Professor Manouvrier was the recipient of many honors: *Chevalier de la Legion* d'Honneur; Honorary Member of the Anthropological Societies of Berlin, Bologna, Coimbra, Florence, London, Moscow, Rome, St. Petersburg, Stockholm, Vienna, and Washington. Professor Manouvrier was the one foreigner chosen to represent Anthropology on the lecture platform of the Louisiana Purchase Expedition, St. Louis, in 1904.

GEORGE GRANT MACCURDY

YALE UNIVERSITY
*New Haven, Conn.*

## SAXTON TEMPLE POPE

Saxton Temple Pope, surgeon, archer, Indian student, died August 8, 1926. Born in Texas in 1875 at a frontier army post, Pope graduated in medicine at the University of California, in 1899, returning to the same institution in 1912 to teach surgery. Into the

remaining fourteen years of his life were crowded a professional career, research investigation, a busy professional practice, the direction of medical organizations, war work, travel and big game hunting, an intensive practical and historical study of archery, many friendships, and a happy family life. Of special interest to anthropologists are his books, "Hunting with the Bow and Arrow," and three monographs issued by the University of California between 1918 and 1923: "Yahi Archery," "The Medical History of Ishi," and "A Study of Bows and Arrows." Learning the rudiments of his archery from the last member of the Yahi tribe, Pope went on not only to killing bears and lions with arrows, but to important studies of the structure of bows, the flight and penetration of arrows, arrow releases, and the nature and effect of the materials used for bows, backings, strings, shafts, featherings, and heads. His investigations in these directions are based primarily on original experiments, supplemented by culling of the scattered literature. Pope was an eminent surgeon, a brilliant teacher, a most delightful lecturer, an incisive and vivid writer. As a man he was energetic, original, self-reliant, unwaveringly loyal, and modest. He left no enemies and only the warmest of friends.

A. L. KROEBER

G. A. SCHWEINFURTH. The great botanist and explorer of Africa, G. A. Schweinfurth, was born at Riga in 1836 and died at Berlin, September 19, 1925. He played an important part in the study of the Stone Age in Egypt, Palestine, and Tunisia. His writings on this subject appeared chiefly in the *Zeitschrift für Ethnologie* and the *Verhandlungen* of the Ethnographical Society of Berlin. (S. R., *R. Arch.*, XXIII, 1926, p. 124.)

*Amer. Journal of Archaeology*

## MUSEUM, UNIVERSITY OF MICHIGAN

This winter, construction will be begun upon a new Museum building which will house the collections in Natural Sciences and Anthropology. Every effort is being made to provide this building with the most modern equipment for the proper handling and study of the collections. The Museum of Anthropology will occupy the fourth floor and will have storage and office rooms, as well as a large exhibition hall for synoptic exhibits. The Museum is divided into five

divisions with the following names: Archaeology, Ethnology, Physical Anthropology, The Orient, and The Great Lakes. Each of these divisions will have a large room so equipped with storage cases as to insure proper preservation of specimens and greatest possible facility of access. Each of these rooms will also have laboratory tables equipped with hot and cold water, electric, gas, and compressed air connections, and various filing units for books, catalogs and charts. The Curator of each division will have an office of his own in which there will also be laboratory facilities. The general rooms of the Museum include a cataloging and conference room, a preparation room, and an office set aside for the use of visiting anthropologists. The floor space occupied by the Museum totals about eight and a quarter thousand square feet, of which a little more than sixteen hundred has been assigned to the division of the Great Lakes. Present plans call for the occupation of these rooms about July of 1928.

## Institut d'Ethnologie

The Institut d'Ethnologie (Executive Committee: Messrs. Finot, Lévy-Bruhl, Mauss, Meillet, and Rivet) announces the following courses for the academic year, 1926–27: Descriptive Ethnography, Marcel Mauss; Descriptive Linguistics, Marcel Cohen; Physical Anthropology, Paul Rivet; Prehistory, Abbé Henri Breuil; Linguistics and Ethnography of Eastern Asia and Oceania, Jean Przyluski; African Linguistics and Ethnography,—

Among the courses in anthropology and kindred branches offered in affiliated institutions connected with the University of Paris may be mentioned the following: Races of the French Colonies, R. Verneau; Religion of Uncivilized Peoples, M. Mauss; Ethnography, Religion and History of Central America, especially of Guatemala and Yucatan, M. Raynaud; Origin, History, and Present State of the Sudanese Civilizations and Languages, M. Labouret; Dialects and Customs of French West Africa, M. Labouret; General Sociology, M. Fauconnet; History, Political and Social Organization of Madagascar, G. Julian; Geography, History and Institutions of Far Eastern States, M. Granet; General Linguistics, M. Vendryes; Prehistory, G. Renard. M. Capitan is to lecture on Peruvian Art, on Human Origins in Central America, the Antilles, Colombia and Venezuela, and on Remote Ethnic Accessions to America.

## The Catholic Anthropological Conference

The Catholic Anthropological Conference was organized on April 6, 1926 for the purpose of promoting (1) the ethnological training of candidates for mission work and (2) research and publication by Catholic missionaries, specialists, and other students. The officers for 1926 include the Rt. Rev. Thomas J. Shahan, D. D., Rector, Catholic University of America, D. C. (President); and Rev. John M. Cooper, D. D., of the same university, (Secretary-Treasurer), to whom inquiries concerning membership, questionnaires, etc. may be addressed. The Conference has issued mimeographed sheets for the guidance of missionaries, with suggestions as to literature, specific field research, and a simplified phonetic system for the transcription of as yet unrecorded languages. For the present, manuscripts will be published in English, but suitable articles in any of the more common European languages will be accepted and translated.

We cordially congratulate those active in organizing the Conference on having called into being what may develop into as effective an instrument for the acquisition and diffusion of anthropological knowledge as *Anthropos*.

The Anthropological Society of Philadelphia has elected the following officers for 1926–7. President, Prof. E. M. Fogel; Vice-Presidents, Mr. D. S. Davidson and Dr. J. Alden Mason, all of the University of Pennsylvania; Secretary, Mr. E. P. Wilkins.
The program of the past year included addresses by:

Dr. E. H. Westerman
Dr. Edward Chiera
Dr. Leo Frachtenberg
Dr. Herbert V. Williams

Miss Frances Densmore has returned to her home in Red Wing, Minnesota, after an absence of ten weeks in the field. During the latter portion of that time she recorded the songs of Indians gathered in the hop fields at Chilliwack, British Columbia, where they are employed as hop pickers. Songs were obtained from Indians living on the west coast of Vancouver Island, at Squamish and Fort Simpson, as well as on the Skeena, Nass, Thompson and Fraser rivers and in other localities. This regional study of Indian music yielded interesting results for comparison among the localities under observation, and for comparison with tribes previously studied. The

early portion of the season was spent at Neah Bay, Washington, where songs of the Makah, Quileute and Clayoquot Indians were recorded.

DR. MARGARET MEAD delivered a lecture on "Rank in Samoa" on Oct. 25, 1926, before the joint meeting of the Section of Anthropology and Psychology of the New York Academy of Sciences with the American Ethnological Society.

DR. PAUL RADIN delivered a lecture on "The Ottawa Indians of Michigan" on November 22, 1926 before the meeting of the Section of Anthropology and Psychology of the New York Academy of Sciences in conjunction with the American Ethnological Society.

On October 19, 1926, an archaeological society was formed at Trujillo, Peru, for the study of the pre-Inca civilizations, especially that of the Gran Chimu. Major Otto Holstein was elected president of the new society.

THE MUNICIPAL MUSEUM, Rochester, N. Y., conducted archaeological work during October, 1926, at sites along the headwaters of the Genesee River, with particular reference to tracing the migration route of the Seneca-Iroquois.

Mr. Parker obtained facts in support of the former conclusion that the Seneca people came into this area from the south and southwest. Much of the sub-Iroquoian pottery is either absolutely plain or is cordmarked over its entire surface, showing a strong Algonkian influence. It is totally unlike the "arrived" forms of the cognate Mohawk and Onondaga. The smoking pipes are trumpet-bowled like those of Jefferson County and of certain Chautauqua County sites. None shows the elbow bend, however, such as the third period Algonkian employed.

The site at Lamoka Lake, previously examined, received a more detailed study this year. The extensive ash beds and refuse heaps there were opened and numerous implements discovered. This site is not only pre-Iroquoian but is pre-ceramic Algonkian. Its position is somewhere in the second period, and it may date back several thousand years.

PROFESSOR WILLIAM HENRY HOLMES, director of the National Gallery of Art, was presented on December 1, his eightieth birthday, with a volume containing one hundred and fifty personal letters of felicitation from intimate friends and those colleagues and co-workers

who during the past sixty years have been closely associated with him in the fields of geology, anthropology, exploration, and the fine arts.

THE MUSEUM OF THE AMERICAN INDIAN, New York, is practically ready to open the first unit of its new annex. This unit, one of twelve which it is proposed to erect, will be opened upon the return of the director of the museum, George G. Heye, from Europe. This three-story storage annex, located in the Bronx at Eastern Boulevard, Jarvis Street and Middletown Road, is to receive the surplus material from the overcrowded storage vaults in the main museum building. The new unit will serve primarily as a storehouse, photographic laboratory and workshop, with only a few exhibition cases on the ground floor.

MR. MILES G. BURKITT has been appointed University Lecturer in Prehistory in the Faculty of Archaeology and Anthropology recently established at the Universe of Cambridge.

APPOINTMENTS for the year 1926–1927 in the anthropological division of the Institute of Psychology, Yale University, New Haven, have been announced as follows: Dr. Paul Radin, research fellow; Dr. Beatrice Blackwood, international fellow from England; H. D Skinner, Rockefeller Foundation fellow from New Zealand; research assistants, Dr. Sophie de Aberle, Emily Marion Pilpel, Helen Heffron Roberts.

THE ROCKEFELLER FOUNDATION has offered to appropriate to the Bernice P. Bishop Museum of Honolulu for Polynesian anthropological research sums amounting to $50,000 over a period of five years, providing that an equal amount be raised for the same purpose from other sources.

D. JENNESS is investigating and collecting relics from the sites of ancient Eskimo habitations on the Alaskan and Siberian coasts of Bering Sea. Bering Strait has been a route for migration of aboriginal peoples between Asia and America and is a favorable place for the study of these migrations and the spread of Asiatic ethnological influences among the Eskimo of Northern Canada. In the course of this work, study will be made of modern Eskimo culture and language, particularly for the purpose of augmenting a "Comparative Grammar and Vocabulary of the Western Eskimo Dialects," which Mr. Jenness is compiling.

C. M. BARBEAU is continuing a study of the social organization, religion and legends of the Tsimshian Indian tribes of Skeena river, upon which he has been engaged for some years. He is also collecting information concerning the totem poles of these tribes.

HARLAN I. SMITH is continuing the work of restoring and preserving totem poles in the Skeena river area. Owing to decline of Indian social organization under the influence of white civilization, these interesting relics are rapidly deteriorating and in danger of complete disappearance. Last year the Canadian National Railways, the Department of Indian Affairs, the Parks Branch, Department of the Interior, and the Victoria Memorial Museum took prompt action to preserve the remaining totem poles. In the course of this work, Mr. Smith is also studying and collecting archaeological specimens for the museum.

A. E. PORSILD AND R. T. PORSILD are being sent by the Department of the Interior to the country just east of the Mackenzie river delta to investigate conditions for the introduction of reindeer.

*Canadian Field Naturalist*

The following papers were presented at the autumn meeting of the National Academy of Sciences held in Philadelphia on Nov. 8 and 9, 1926:

*Elden Pueblo:* J. WALTER FEWKES.

The object of the communication was to announce the discovery, by archaeological methods, of a prehistoric pueblo which had never been described. This ancient pueblo is situated six miles east of Flagstaff, Arizona, and about two hundred yards west of the National Trail Highway. An attempt is made to indicate the affinities of its former inhabitants as shown by the objects found illustrating the arts and customs of these people.

This pueblo was excavated during the period from June to September of the present year. It was practically unknown to any scientific man before May, although the artificial appearance of the clearing in the pines had been recognized as the site of a settlement from the time Flagstaff was settled by the white people.

The name "Elden Pueblo" was given to the ruin by the author on account of its neighborhood to Elden Mesa, an eastern spur of the San Francisco Mountains. Its form is rectangular in shape, oriented north and south, measuring one hundred and fifty feet

long by about one hundred and twenty-five feet wide. It contains one ceremonial room corresponding to a kiva, which was used for councils and religious purposes. The masonry of the walls is perhaps the crudest of that of all the pueblos. Many of the stones that formed the walls were megaliths, unworked and set on edge. It was found necessary to cement the top of the walls in order to prevent the water from percolating through the structure; in this way the rocks were fastened in place; only a few of them were squared or set in series. Apparently the wall of the structure was two stories high and with the exception of one opening there were no lateral entrances.

*Some physical characteristics of the American Negro population:* MELVILLE J. HERSKOVITS (introduced by Professor Franz Boas).

Studies of the physical anthropology of the American Negro show, after a number of generations of crossing, the formation of a relatively definite type. This type in spite of its heterozygous character, is quite homogeneous, and has been effected by a social selective mechanism involving the desirability of Caucasoid traits, dark men choosing light-colored wives. It is important, however, to investigate differences within this population which occur with differing environments, various places of birth, and different occupations, and such differences are analyzed in this paper.

*Science*

FATHER WILHELM SCHMIDT, founder and until recently editor of *Anthropos*, has accepted the post of Director of the Museo Laterano Missionario-Etnologico in Rome, an outgrowth of the Vatican Mission Exposition of 1925. Fathers Pankratius and Schulien have been appointed as assistants, and temporarily Father Martin Gusinde of the Museo in Santiago de Chile has been collaborating with Father Schmidt. The collections are housed in the Palazzo Laterano.

*Anthropos*, 1926, 21:996.

To assure the permanency and further development of the *American Journal of Physical Anthropology* this journal has been, by mutual consent and agreement, transferred from its founder and publisher, Dr. Aleš Hrdlička, to The Wistar Institute of Anatomy and Biology. This transfer will be effective January 1, 1927.

There will be no changes in the scientific policy of the journal.

Dr. Hrdlička will continue as editor, and all communications intended for publication in the *American Journal of Physical Anthropology* should be sent to him at the U. S. National Museum, Washington, D. C.

For the present the journal will be published on the 30th of March, June, September, and December. Each number will contain about 125 pages, or 500 pages to each volume.

In order that numbers may be increased in size, should this be necessary, the journal will be sold by the volume, and not by the year.

Price, per volume of 500 pages, $6.00, Domestic: $6.50, Foreign.

Subscriptions and orders for back numbers should be sent direct to the publishers:—

THE WISTAR INSTITUTE OF ANATOMY AND BIOLOGY,
THIRTY-SIXTH ST. AND WOODLAND AVE.,
PHILADELPHIA, PA.

## CORRECTION

In the October-December, 1926 issue of the Anthropologist in the article on a statistical method for showing special relationships,[1] an error was made in one of the formulae. Thus, on page 596 the formula for Cell B reads $\frac{(A+B)\times(C+D)}{T}$ = the chance frequency. This formula should read $\frac{(A+B)\times(B+D)}{T}$ = the chance frequency. This error was simply a misprint and does not in any way affect the validity of the other figures as the correct formula was used in their computation.

FORREST E. CLEMENTS
UNIV. OF CALIF.
BERKELEY, CALIF.

[1] Clements, Schenck and Brown. A New Objective Method of Showing Special Relationships, American Anthropologist, Vol. 28, No. 4, 1926: 585–604.